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ADDISONIA

COLORED ILLUSTRATIONS

AND

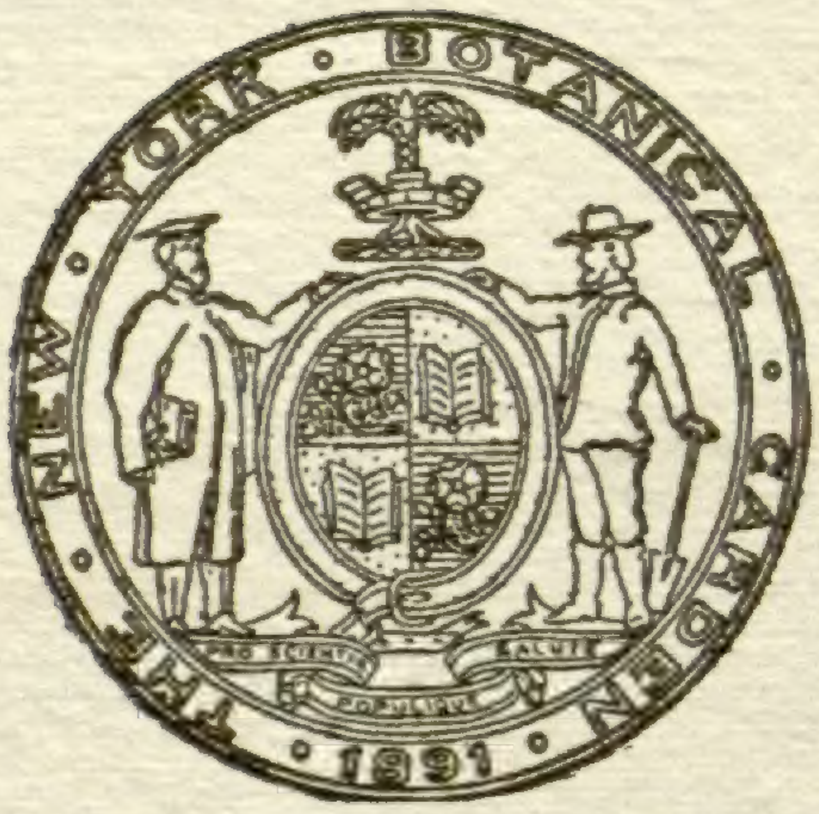
POPULAR DESCRIPTIONS

OF

PLANTS

VOLUME 21

1939—1942



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VOLUME 21 NUMBER 1

APRIL, 1939

PUBLISHED BY

THE NEW YORK BOTANICAL GARDEN

(ADDISON BROWN FUND)

MAY 20, 1939

ANNOUNCEMENT

A bequest made to the New York Botanical Garden by a former President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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LEUCOCORYNE IXIOIDES

(Plate 673)

LEUCOCORYNE IXIOIDES

Glory-of-the-Sun

Native of Chile

Family ALLIACEAE — ONION Family

Brodiaea ixioides Hook. Bot. Mag. *pl. 2382.* 1823.
Leucocoryne ixioides Lindl. Bot. Reg. sub. *pl. 1293.* 1830.
Leucocoryne ixioides odorata 'C. Elliott', Gard. Chron. III. **85**: 252. 1929.

The Chilean bulbous plant to which Clarence Elliott in 1928 gave the name Glory-of-the-Sun was first described and figured in 1823 in the Botanical Magazine, Plate 2382, as *Brodiaea ixioides.* The material from which the original description was prepared was collected near Valparaiso and was flowered near London in October. Seven years later Lindley transferred the new plant to the genus *Leucocoryne.* For half a century following its original introduction occasional references to our plant occur in horticultural literature and from this source we learn that several consignments of bulbs reached Europe, but later it appears to have been lost to cultivation and present day gardeners did not have an opportunity of seeing *Leucocoryne ixiodes* until Clarence Elliott reintroduced it in 1928. Writing of his Andean expedition in the Gardeners' Chronicle Vol. 85: 262 Mr. Elliott tells of first seeing the flowers in white, lilac and blue forms offered for sale in the market place at Valparaiso. The blue form he says is the best and this probably accounts for the obvious superiority of the form figured here over the early pictures of this species, most of which depict white or lilac flowers. Of *Leucocoryne ixioides* Mr. Elliott writes that it has "wiry, eighteen-inch stems carrying loose umbels or heads of anything up to six or eight *Chionodoxa Luciliae* blossoms, the same shape and texture, the same size, or often considerably larger, and the same splendid clear China-blue passing to a white center, but with three-yellow stamens lying out of the perianth. Its length of wiry stem gives it an added grace, both growing and when picked, while as a crowning glory it is deliciously fragrant with a rich, sweet almond scent. *Chionodoxa Luciliae* is called Glory-of-the-Snow, and I shall call the *Leucocoryne* . . . so like *Chionodoxa* in many ways . . . Glory-of-the-Sun."

Upon inquiry Mr. Elliott discovered that the flowers he saw in Valparaiso were obtained from Coquimbo, some two hundred miles to the north along the coast. Mr. Elliott and his companion Dr. Balfour Gourley made their way to Coquimbo and shortly after their arrival were taken to a farm five or six miles out of town where they found the Glory-of-the-Sun growing in great profusion. Quoting Mr. Elliott he says "Never have I seen such an astounding flower picture. It grew in misty sweeps by the mile and by the million, springing leafless from the bare, barren ground—For an hour or so

we just wandered about among these fields of Leucocoryne, too astonished and enchanted to take a single blossom or dig a single bulb.'' Eventually, however, a considerable quantity of bulbs was collected for trans-shipment to England. The soil in which they grew was sandy and stony and due to the fact that they were buried so deeply considerable difficulty was encountered in digging them. From the bulbs sent home by Mr. Elliott and planted about midsummer, flowers were obtained the following spring. On March 26, 1929 under the name of *Leucocoryne ixioides odorata* the Royal Horticultural Society of Great Britain gave the plant an award of merit.

The Glory-of-the-Sun was exhibited for the first time in America by John T. Scheepers, Inc. at the International Flower Show held in New York City in March 1931 and on this occasion received a Gold Medal Award. Both here and abroad it was much publicised as a plant of great promise for cut flower purposes, but the expectations aroused among horticulturists have hardly been justified by its subsequent behavior in gardens—at least this is true in Eastern North America. Natural vegetative increase does not appear to occur in *Leucocoryne ixioides* and plants raised from seed vary very considerably in color, size of flower and number of flowers in the umbel. Under greenhouse cultivation the Glory-of-the-Sun responds to conditions which suit Freesias—a cool airy house, full sunlight, careful watering and a well drained soil. In milder parts of the West Coast it can be grown in the open air.

The Glory-of-the-Sun is a scapose herb arising from a globose bulb which is covered with a membranous brown tunic. The leaves are linear, bright green, up to ten inches long and one-eighth of an inch wide, strongly striate, acute, slightly concave on the upper side, semiterete on the lower side. They appear before or together with the flower-scapes and number three or four to each bulb. The scapes are green and wiry, erect, terete, up to eighteen inches long. The inflorescence is a terminal umbel with two to ten sweet-scented flowers one and one-half to two and one-half inches across. The spathe is two-valved, the valves linear-lanceolate, at first green, but becoming brown and scarious, an inch to an inch and one-fourth long. The perianth tube is about one-half inch long and one-tenth of an inch wide, brownish-green. The perianth segments are spreading, about one inch long, lanceolate to oblanceolate with wavy margins, purplish blue fading to white towards the center. Three subulate, fleshy, yellow staminodia five-sixteenths of an inch long protrude from the throat of the perianth. The three anthers are one-eighth of an inch long, nearly sessile at about the center of the perianth tube and completely included. The gynoecium is one-fourth of an inch long; the ovary columnar, shallowly three-lobed; the style columnar, white; the stigma capitate and papillose. The fruit is a three-celled, dehiscent, capsule, the seeds small and black.

T. H. EVERETT.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence in bud. Fig. 2.—Inflorescence in flower. Fig. 3.—A bulb and leaves. Fig. 4.—The corolla, laid open × 1½. Fig. 5.—The gynoecium × 3.

HUGERIA ERYTHROCARPA

(Plate 674)

HUGERIA ERYTHROCARPA

Southern Mountain Cranberry

Native of the Southern Appalachians

Family VACCINIACEAE — BLUEBERRY Family

Vaccinium erythrocarpum Michx. Fl. Bor. Am. **1**: 227. 1803.
Oxycoccus erythrocarpus Pers. Syn. **1**: 419. 1805.
Schollera erythrocarpa Britton, Mem. Torr. Bot. Club **5**: 252. 1894.
Hugeria erythrocarpa Small, Fl. Se. U.S. 897, 1336. 1903.
Oxycoccoides erythrocarpus Nakai, Tokyo Bot. Mag. **31**: 247. 1917.

It was a bronzy-golden September afternoon. The mountain valleys were tinged with the bluish patina of Autumn mist and the air was filled with the aromatic pungency of spruce and fir. It was there along one of the high trails of the Great Smoky Mountains, marked only by the broad tracks of the black bear, that I first tasted the fruit of the Southern Mountain Cranberry.

Then, even as now, I wondered why some enterprising person did not bring so delightful a fruit into cultivation. To be sure, if one expects a mild and bland flavor, the first taste is likely to be something of a surprise, for the fruits are definitely acid. However, races from different localities vary considerably in palatibility, as do individual plants in the same patch and, having eaten enough of them, I am certain that with a little searching, excellent forms could be found; races which would be superior, both in productivity and flavor of fruit, to the ling-berry (*Vitis-idaea punctata* which, although also native in this country, we still import from Europe) and our own native cultivated cranberry (*Oxycoccus macrocarpus*).

Aside from the possibility of adding this plant to those of our native cultivated fruits, the Southern Mountain Cranberry is interesting in belonging to that group of genera limited in their distribution to the mountains of our southeastern states and to eastern Asia. Originally described as a *Vaccinium*, it was early recognized as not belonging with the blueberries and, on the basis of its corolla, was placed with the true cranberries. Study of the basic anatomy of the genera involved led me some years ago to conclude that *Vaccinium*, *Oxycoccus* and *Hugeria* should be separated; that the corolla form of the latter two was probably a case of parallel evolution and, therefore, that the late Dr. J. K. Small was correct in establishing the genus *Hugeria*[1] as we know it today. In addition to our species, several others are found in Japan, Korea and certain mountainous parts of China.

[1] The genus *Hugeria*, was named in honor of Arthur Middleton Huger, author, poet and nature lover; born March 20, 1842, at Savannah, Ga.; died May 15, 1925 at Union, S. C. In his youth he spent five years in Paris and Heidelberg; from '62–'65 he was with the Marion Light Artillery and Engineering Corps of the Confederate Army, later going into business in various parts of the South. Although a keen student of botany, he published but little. Indirectly, however, he has had a considerable influence on our understanding of the botany of the Southern States for one of the prized possessions of the late Dr. J. K. Small was a copy of Chapman's Flora which contained copious marginal notes done in Huger's exceedingly fine script. Many of these pertinent field observations were incorporated in the text of Dr. Small's various manuals.

The Southern Mountain Cranberry is a common plant at fairly high altitudes in the Southern Appalachians, often being associated with the indigenous spruce and fir forests of the region. It reaches its maximum development in the forest openings near the lower limits of the spruce and, where it is present without the spruce, it is safe to assume that the spruce has become extinct in the region in the not very distant geological past. The present distribution of the Southern Mountain Cranberry is from the borders of South Carolina and Georgia northward on the metamorphic and igneous Southern Appalachians through Tennessee and North Carolina into the higher Blue Ridge of Virginia and is also sometimes locally abundant at the higher elevations in the Alleghenies of Virginia and West Virginia.

The flowering materials here illustrated were fresh specimens collected on White Top, Virginia (*Camp 1159*); the fruiting material was obtained through the courtesy of Dr. H. M. Jennison who collected it in the Great Smoky Mountains of Tennessee.

The Southern Mountain Cranberry is a divergently branched shrub one to six feet high with irregular or zig-zag twigs pubescent in broad lines, or sometimes nearly glabrous. The deciduous leaves are one to three inches long and one-half to one inch wide, reticulate-veined, thin, light green above and slightly paler beneath or occasionally quite pallid. Depending on the race, individual, age, or portion of the plant, the leaves vary from oval to narrowly lanceolate or even sub-falcate; they are long-acuminate at the apex and rounded, truncate, or rarely sub-cordate at the base, with those at the ends of the branches sometimes basally obtuse or broadly cuneate. The leaf-margins are setaceously glandular serrate, similar glandular setae being present and abundant, particularly on the veins below; they are pubescent on the veins above, and their upper surfaces may also be set with glandular setae, particularly in those races where they are abundant below. The flowers are solitary in the axils of leaves which are scarcely different from those of the sterile branches. The peduncles are glabrous, pendulous, filiform, three-eighths to five-eighths inch long, basally bearing two fugacious, setiform bracts about one-eighth inch long, apically slightly enlarged but continuous and not articulated with the ovary. The calyx tube is four-toothed. The corolla is five-sixteenths to seven-sixteenths inch long, deeply four-parted, the lobes strongly reflexed and five to six times as long as the tube, generally deep pink, or in some races varying from nearly white to red. Due to the reflexed corolla lobes, the stamens appear exserted; the filaments are slightly less than one-eighth inch long, pubescent on the back and margins; anthers awnless, about five-sixteenths inch long; the anther tubes are longer than the sacs, flexuose, with apical pores. The mature fruits are globose to pyriform, light red to wine colored, or in some races purple-black, three-sixteenths to five-sixteenths inch in diameter, or on individual plants larger, mildly and pleasantly tart to decidedly acid.

W. H. CAMP.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Natural size. Fig. 2.—Flower at anthesis × 2.5. Fig. 3.—The inferior ovary with style × 2.5. Fig. 4.—Adaxial view of stamen × 5. Fig. 5.—Side view of stamen × 5. Fig. 6.—Twig with maturing fruit. Natural size. Fig. 7.—Pyriform fruit,—not unusual in some races.

Mary E. Eaton

CLEMATIS TEXENSIS

(Plate 675)

CLEMATIS TEXENSIS

Scarlet Clematis

Native of Central Texas

Family RANUNCULACEAE — CROWFOOT Family

Clematis texensis Buckl. Proc. Acad. Sci. Phil. '**1861**' : 448. 1862.
Clematis Viorna var. *coccinea* A. Gray, Pl. Wright. **2** : 7. 1852.
Clematis coccinea Engelm. ex. A. Gray, Pl. Wright. **2** : 7. 1852.
Viorna coccinea Small, Fl. SE. U.S. 438. 1903.

One of the prize contributions to horticulture in the form of an unusual climber is the scarlet clematis of Central Texas. In its native home it is frequent but not common, occurring on shaded ledges along streams, and in moist ravines and river bottoms. It climbs, as do all the kinds of clematis, by the twisting of the leaf rachis, but is unique in that large genus by reason of its scarlet flowers.

Perfectly hardy up to southern Connecticut, and root-hardy still further north, it reaches a height of fifteen or twenty feet in a season's growth. A well-grown plant covered with its scarlet bells is worth going many miles to see.

The illustration was made from wild material sent to the writer by Professor B. C. Tharp of the University of Texas.

Whether *Viorna* be a distinct genus separated from *Clematis* is a moot question, and it seems to the writer an unnecessary separation, for the series of species which are intermediate is such that seven or eight other genera would have to be segregated likewise, thus cluttering botanical nomenclature with a number of new combinations, none of which are necessary nor of any assistance to the clarification of the problems of Taxonomic Botany.

The scarlet clematis is a woody vine, climbing by means of prehensile leaf-rachises and petiolules. The stems and branches are clothed with a loose, bright brown bark. The leaves are opposite, pinnate, the leaflets up to eight in number, long-petioluled and cordate, acute or rounded at the apex, the margins entire. The blades are soft green and usually somewhat glaucous, one-half to two and one-half inches long, the veins and veinlets rather prominent. Occasionally some of the leaflets are two- or three-lobed. The flowers are solitary on peduncles from the leaf-axils, the pedicel purplish, nodding apically, three to four times the length of the peduncle and separated from it by two leaf-like bracts. The flower is three-fourths of an inch to an inch long, ovoid-urceolate, bright scarlet (occasionally varying to purple) outside, yellowish inside. The four calyx-lobes

are ovate, thick and leathery, with a slight apical dilation which terminates in a fleshy mucro. The inner face of these lobes is glabrous, the thick edges are velvety-pubescent. The corolla is lacking. The stamens are numerous, pale yellow. The filaments are three-eighths of an inch long, the lower half glabrous, the upper half villous. The anthers are one-fourth of an inch long, linear-lanceolate, the connective puberulent below, hirsute above and prolonged into apical caudae. The pistils are about one-half inch long, villous with silky hairs, the stigmatic portion naked and recurved. The fruit is a head of achenes which are orbicular and flattened, somewhat silky hirsute apically and tailed with the tawny-plumose, persistent style increased to an inch and a half in length.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering portion of the stem. Fig. 2.—A sepal × 1½. Fig. 3.—A stamen × 2.

COOPERIA SMALLII

(Plate 676)

COOPERIA SMALLII

Yellow Cooperia

Native of southern Texas

Family AMARYLLIDACEAE — AMARYLLIS Family

Cooperia Smallii **Alexander, sp. nov.**[1]

Of the five species in the genus *Cooperia*, all are white-flowered, usually tinged pink or reddish on the outside. So standard in fact had white seemed as the *Cooperia* color that it was with great surprise in 1930 when Robert Runyon of Brownsville, Texas sent bulbs of what he stated was a yellow *Cooperia*. The bulbs were planted and watched carefully, and before many months a yellow bud began to develop. As is customary with cooperias, it opened in the late afternoon and was indeed a distinct yellow. Although there was no doubt of its being a new and undescribed species, its publication has been delayed in one way or another, and only now is it possible to publish it with a color plate.

This, the only known yellow *Cooperia* is hereby dedicated to the memory of the late John Kunkel Small, with whom the writer was associated for so many years, and who would himself have published the species had he lived to do so.

Cooperia is a strictly American genus, closely related to *Zephyranthes*, differing in the elongated perianth-tube, the night-blooming habit and the short filaments with erect, non-versatile anthers. The species are native in Texas and northern Mexico, extending into New Mexico, Kansas and Louisiana. One species is known only from Peru. The North American species grow in dry soil on open prairies.

While it has been suggested that this species is a bigeneric hybrid, deriving its yellow color from one of the yellow-flowered *Zephyranthes*, this seems rather an unnecessarily far-fetched idea, its only reason being one of color, and the presence of yellow flowers in other white-flowered genera of Amaryllidaceae is enough to offer clear reason for its occurrence in *Cooperia*.

Small's *Cooperia* is a scapose, bulbous herb, the bulb seated some two or three inches underground, obovoid, about an inch high and

[1] *Cooperia Smallii* Alexander sp. nov. Species ovario stipitate (stipite 3–7 mm. longa), perianthia hypocrateriformi, tubo 18–20 mm. longo, limbo 2 cm. diametro, lobis ovatis distinguitur; a speciebus omnibus adhuc cognatis perianthio luteo differt.

broad, white with a membranous brown coat. The leaves are bright green, one-sixteenth to one-eighth of an inch wide and six inches long, acute, channeled on the upper side, the underside rounded and several ribbed. The scape is erect, six to eight inches tall, slightly flattened, bright green and somewhat glaucescent, topped by a solitary flower. The spathe is membranous, an inch and a half long, greenish tan, entire and short acuminate at the apex, finely nerved. The flower terminates a stout pedicel an eighth to a fourth of an inch long. The ovary is cylindric, bluntly three-angled, about three-eighths of an inch long. The perianth-tube is green, three-fourths of an inch long, abruptly expanded into the limb. The perianth is lemon-yellow, its divisions broadly ovate, the outer three segments slightly the larger, often flushed reddish, with a green rib outside near the apex which extends into a short green apiculate hood. The stamens are erect, the filaments subulate, about three-sixteenths of an inch long, greenish and fleshy; the anthers linear, pale yellow, about five-sixteenths of an inch long. The style is slender, about one inch long, green with a whitish apex. The three stigmas are globular and whitish. The capsule is strongly three-lobed, obovoid in outline, three-fourths of an inch long, the valves striate. The seeds are thin and wafer-like with a thin, glossy black coat.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A bud. Fig. 2.—A flower in the early evening. Fig. 3.—The same flower early the next morning. Fig. 4.—Two perianth segments and their attached stamens. Fig. 5.—The gynoecium. Fig. 6.—A mature capsule. Fig. 7.—A bulb with leaves and an opened capsule.

LONICERA CANADENSIS

(Plate 677)

LONICERA CANADENSIS

Fly-honeysuckle

Native of northeastern United States

Family CAPRIFOLIACEAE — HONEYSUCKLE Family

Lonicera canadensis Bartr. ex Marsh. Arbust. 81. 1785.
Lonicera ciliata Muhl. Cat. 23. 1813.
Xylosteon ciliatum Pursh. Fl. Am. Sept. 161. 1814.
Xylosteon tataricum Michx. Fl. Bor. Am. 1: 106. 1803.

The shrubby Loniceras are not plentiful in North America, their principal center of distribution being eastern Asia. Since however, one of the anomalies of botany is the relationship of the floras of eastern North America and eastern Asia, it is no surprise to find a minor center on this continent. Our present subject extends the farthest south of any of this typically northern group, reaching its southernmost limit on the highest peaks of the North Carolina Blue Ridge in cool, mossy evergreen forests. In fact, throughout its range such a locality is its chosen habitat, and in these gloomy stretches its pale green foliage and long-stalked, drooping, scarlet berries furnish a bright element usually lacking. Its nearest American relative is *L. utahensis* of the Rocky Mountains from which it differs only in slight technical characters; the other nodding-flowered species are Asiatic. *L. canadensis* is not particularly satisfactory as a cultivated plant unless one has a moist evergreen woodland in which to grow it, but in such a location it is a welcome touch of color.

The fly-honeysuckle is a shrub three to six feet tall, with wide-spreading, glabrous, straggling branches, covered, as are the main stems, with a thin, pale-brown, shreddy bark. The leaves are opposite, short petioled, light yellow-green, the blades and petioles prominently ciliate. The leaf-blades are glabrous on both surfaces, one to four inches long, ovate to oblong, acute, rounded to cordate at the base. The flowers are borne in pairs on slender, drooping, axillary peduncles. The ovaries are inferior, slenderly ovoid, an eighth of an inch long, glabrous, each subtended by a minute, brown, ciliate bractlet, and topped by the five minute calyx-lobes. The corollas are funnelform and regular, yellowish cream tinged reddish, three-fourths of an inch to an inch long, glabrous outside, the tube strongly gibbous at the base and pilose internally. The five stamens are adnate to the top of the tube and alternate with the five ovate, obtuse corolla-lobes. The pistil is very slender and much exserted, the stigma capitate. The fruit is a bright-red, ovoid, few-seeded berry, one-half inch long and tipped with the persistent calyx.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering twig. Fig. 2.—A corolla, laid open ×1½. Fig. 3.—Two ovaries ×3, showing the bractlets. Fig. 4.—A fruiting twig.

CHRYSOPSIS HYSSOPIFOLIA

(Plate 678)

CHRYSOPSIS HYSSOPIFOLIA

Native of southeastern United States

Family CARDUACEAE — THISTLE Family

Chrysopsis hyssopifolia **Nutt. Jour. Acad. Phil. 7: 67. 1834.**

Among the many endemic genera of composites for which the western hemisphere is noted, *Chrysopsis* is one of the most attractive of the yellow-rayed sorts, several of its species being of distinct garden merit. All or nearly all are hardy and neither weedy nor rapidly spreading in their growth. The genus is confined to North America, its best known species being *C. mariana*, the golden aster. All are rather low-growing compact plants, and when seen in mass, form splendid golden mounds against gray-green foliage. In the typical section of the genus, our present subject is one of the least showy, but its narrow foliage and clear yellow heads are not unattractive. In nature, the plant is quite uncommon, being known only from Florida and the adjacent sections of Alabama, where it grows in sandy, open pinelands. It is most nearly related to *C. trichophylla* from which it differs principally in its linear nearly glabrous foliage and somewhat smaller flower heads. The biennial group to which these species belong is notable for its winter rosette of woolly leaves, a habit indicative of dry soil, and restricted to the southeastern species. The plains and western species of the genus are mostly coarse-hairy or hispid, much-branched, and perennial, while the other southeastern group with grass-like, silvered foliage is best segregated into the genus *Pityopsis*.

Chrysopsis hyssopifolia is a biennial herb up to thirty inches tall, the stem glabrous, unbranched below the inflorescence. The leaves of the first year basal rosette are spatulate, about two inches long, covered with a cotton-like webbing except on the petiolar portion. The stem leaves are numerous, linear to linear-spatulate, one to two inches long, glabrous or sparingly cobwebby when young. The inflorescence is a compound cyme, and terminates the stem, its heads solitary at the ends of the branches and branchlets. The involucres are about three-eighths of an inch long, the phyllaries linear and acute. The ray-florets are about three-eighths of an inch long, bright yellow, pistillate and fertile. The disk florets are one-fourth of an inch long, perfect and fertile, bright yellow, the five lobes minute. The achenes are tan colored, obliquely obovate, somewhat flattened, glabrous except for a basal fringe of silky hairs which extends partly up the two edges. The pappus is double, the outer series an irregu-

lar ring of minute bristles, the inner series of numerous barbellate bristles a fourth of an inch long.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Top portion of a flowering plant. Fig. 2.—A ray floret × 3. Fig. 3.—A disk floret × 3.

CAMPANULA DIVARICATA

(Plate 679)

CAMPANULA DIVARICATA

Appalachian harebell

Native of the southern Appalachians

Family CAMPANULACEAE — BELLFLOWER Family

Campanula divaricata Michx. Fl. Bor. Am. 1 : 109. 1803.
?Campanula flexuosa Michx. Fl. Bor. Am. 1 : 109. 1803.

The large north temperate genus *Campanula* is poorly represented in North America and that mostly in the form of Circumboreal species in some one of their forms. In the southern Appalachians however, are two endemic species, each with unusual characters of its own and without close relatives elsewhere. One, *C. americana* is so unusual as to have been segregated as the genus *Campanulastrum*, the other, our present subject, unique in its much branched inflorescence, small flowers and long protruding style remains in *Campanula*. It is no doubt a relic of the flora of that ancient continent of Appalachia from which the eastern North American flora was derived, its present range, in fact, still being confined to the upland area of that now much enlarged continent.

Campanula divaricata is native in the southern Appalachians from Maryland to Georgia, Alabama and Kentucky, where regardless of the soil and in the most impossible stiuations its dainty sprays of bloom are a delight to the traveller's eye. Its ability to establish itself in tiny crevices on the face of sheer cliffs is a constant source of surprise, and in such places it is most truly attractive and at home. While not a remarkably showy species, it is eminently deserving of a place in the rock garden, where it will grow in any soil that is well-drained and in any situation. It is inclined to become weak and leggy in shade, and is therefore more suitable for the sunny slope or ledge, where its loosely branched and airy sprays of tiny blue flowers may enliven the midsummer scene. White-flowered forms are known, but are not desirable as the color is weak and dull. The dark-colored form here illustrated was collected in Shenandoah National Park, Virginia, on rocks at the headwaters of the Hog-Camp branch of Rose River (*Camp 2092*), June, 1936.

The Appalachian harebell is a glabrous, perennial herb usually one or two feet tall but occasionally reaching three feet in moist shade. The stem is conspicuously striate and somewhat flexuous. The cauline leaves are two to four inches long, narrowly ovate to

lanceolate, acuminate, tapering at the base into a short distinct petiole. The leaf-blades are dull green, their margins coarsely sinuate-serrate, the teeth flaring. The inflorescence is a loose, divaricately branched panicle, with a solitary flower terminating each branch and branchlet. The flowers are nodding on recurved pedicels, one-fourth to three-eighths of an inch long. The five calyx-teeth are linear-lanceolate to triangular lanceolate, less than half the length of the corolla. The corolla is about one-fourth of an inch long, dull blue varying to white (rarely deep blue), the lanceolate, acute, lobes recurved. The five stamens are the same length as the corolla (with the lobes recurved). The anthers are light yellow-brown, the sacs opening lengthwise. The filaments are membranous, white, the subulate upper portion glabrous, the oblong lower portion strongly ciliate. The ovary is inferior, included in the hypanthium, the exserted style five-eighths of an inch long, teminated by an apparently clavate, pilose stigma, the three lobes of which spread after anthesis. The fruit is an oblong-obovate, ten-ribbed capsule, enclosed in the hypanthium and capped by the persistent calyx. The minute seeds are scattered from basal pores resulting from the upcurling hypanthium valves.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering spray. Fig. 2.—A portion of the stem with leaves. Fig. 3.—A flower × 2. Fig. 4.—The calyx, androecium and gynoecium, showing the natural position of the parts. Fig. 5.—A stamen, front and side view × 3. Fig. 6.—Two sizes of capsule × 3.

STROPHANTHUS PREUSSII

(Plate 680)

STROPHANTHUS PREUSSII

Native of Tropical West Africa

Family APOCYNACEAE — DOGBANE Family

Strophanthus Preussii Engler & Pax, Engl. Jahrb. **15**: 369. 1892.

Strophanthus is a genus of tropical climbers, especially notable for its interestingly constructed flowers, many of its species having long tails to the corolla-tips. Most of these species are yellow-flowered, but a few are white or pink, and among them are the beauties of the genus, especially the three species in the subgenus Roupellia, none of which are as yet known in North American gardens. Our present subject is native in West tropical Africa, the largest center of distribution of the genus, where they grow as high, forest climbers, or some few as shrubs. Another center of distribution is in tropical Asia, the species from there being still less known to cultivation. They are all easily grown in a tropical house wherein there is sufficient head-room, and are easily propagated by cuttings or seeds, when obtainable.

The genus is extremely interesting as one of the sources of the African arrow-poisons, for which the seeds of various species are used, according to locality. The poison is a glucoside called strophanthine which is extracted from the seeds, for there the active principle is most abundant. The effect of the drug is essentially one of muscular paralysis, death resulting from paralyzing of the respiratory muscles. Strophanthine is used medicinally to lower the pulse and raise the blood-pressure, but its extreme activity necessitates great caution as one part in six million is sufficient to cause death. Much still remains to be learned concerning the drug and its proper uses and amounts as well as the quantity obtainable from seeds of the various species.

Strophanthus Preusii is a glabrous stout climbing shrub, with smooth brownish branches bearing whitish lenticels. The leaves are opposite, dark green, elliptic to ovate, entire, somewhat thin, two to five inches long, abruptly acuminate, basally rounded or cuneate. The flowers are borne in terminal peduncled, dichotomous cymes. The floral bracts are foliaceous, ovate to lanceolate, one-fourth to one-half inch long, acute. The calyx is about one-half inch long, the five sepals foliaceous and dissimilar, the outer ones broadly ovate with acute, cuneate tips, the inner ones narrower and contracted at the base. The corolla is externally finely puberulent, the tube and

throat reddish on the outside. The corolla lobes are yellowish-white the first day, darkening to dull lemon-yellow the second day, ovate, abruptly narrowed to reddish-purple filiform appendages five to ten inches long. The staminal filaments are pale pink, very hairy, adnate to the corolla-tube, the free upper portion sharply sigmoid. Five coronal scales (possibly ten laterally fused in pairs) are adnate within the throat of the corolla and alternate with its lobes. These scales are oblanceolate, purple-brown with darker margins, bilobed, with somewhat exserted tips. The anthers are lanceolate-acuminate, versatile, short-caudate at the base, hairy and pinkish-white; the connectives are slate green, broad, long-acuminate, arching high over the stigma, forming a conical ring. The style is stout, nearly columnar, but tapering at the base; the stigma an irregularly lobed and ridged, columnar cap much broader than the style and bright yellow green. The fruit consists of two lanceolate follicles ten inches long and an inch and a fourth broad, brownish, marked with elongated white lenticels. The seeds are elliptic, acuminate, one-third to one-half inch long, tawny-pubescent, with a long coma consisting of a naked stipe and a plumose top.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. **Fig. 1.**—A flower spray. **Fig. 2.**—A corolla laid open. Fig. 3.—A calyx. Fig. 4.—A vertical section of a flower to show position of stamens and gynoecium. Fig. 5.—A portion of stem with leaves. (In the painting the flower spray has been severed, and is so superposed as to appear supra-axillary on the stem, whereas the flower spray is actually terminal.)

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ADDISONIA

COLORED ILLUSTRATIONS

AND

POPULAR DESCRIPTIONS

OF

PLANTS

VOLUME 21 NUMBER 2

APRIL, 1940

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The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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AECHMEA FULGENS DISCOLOR

(Plate 681)

AECHMEA FULGENS DISCOLOR

Native of Brazil

Family BROMELIACEAE — PINEAPPLE Family

Aechmea discolor Morr., Ann. Soc. Gand. **2**: 175. 1846.
Lamprococcus fulgens var. *discolor* Beer, Bromel. 104. 1857.
Aechmea fulgens var. *discolor* Brong., Bot. Mag. pl. 4293. 1847.

It is regrettable that the epiphytic bromeliads are so slow of propagation that they are never likely to become popular house plants, for in their bizarre coloring and unusual appearance they are eminently fitted for the purpose. Furthermore, since in their cupped leaf-bases they retain water which will offset the dry air of apartments and homes, and since they do best in at least partial shade, they would take the place of many popular but difficult horticultural subjects. The unusual combination of red and blue which many of them have when in flower is attractive and desirable. The members of the genus *Aechmea* are among the best of this colorful group, rivaled only by *Billbergia* in beauty. While there are other showy flowered genera in the family, these others are much too rare to ever be available.

The bicolored leaves of our present subject make it one of the most attractive in the genus. As with most of the epiphytic bromeliads, the plant dies after flowering, but is perpetuated by basal offshoots. The typical form of the species has the leaves green on both surfaces, but is otherwise the same. This typical form, however, is not in cultivation, and there seems to be some doubt as to whether the variety *discolor* be not the actual species. The plant is native in tropical South America, the home of most of the brilliantly colored members of the family.

Aechmea fulgens is an epiphytic plant, the ten or twelve leaves basally imbricated so as to form a cupule in which water is retained. The leaves are one to two inches wide, and eight to ten inches long, the upper surface dull green with gray cross-barrings, the under surface purplish, the edges spiny-toothed. The peduncle is four or five inches long, with five or six lanceolate, scarious, papery, spreading bracts one to three inches long. The entire inflorescence, including the peduncle, is about one foot tall, bright red. The inflorescence proper is without bracts, paniculate in its lower portion, the upper part racemoid. The individual flowers are five-eighths inch long. The three calyx-lobes are bright red, completely fused with the hypanthium. The three petals are violet, about one half inch long, concave, not spreading apart. The three stamens are included

in the flower. The filaments are pink and clavate, the anthers sagittate. The style is slender, the three branches spirally twisted together. The fruit is a many seeded berry.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—A leaf. Fig. 3.—Petal, showing the two basal scales and a stamen × 2. Fig. 4.—Hypanthium with perianth removed, showing gynoecium and androecium × 2.

TRADESCANTIA WARSCEWICZIANA

(Plate 682)

TRADESCANTIA WARSZEWICZIANA

Native of Central America

Family COMMELINACEAE — SPIDERWORT Family

Tradescantia Warszewicziana Kunth et Bouché, Ind. Sem. Hort. Berol. 11. 1847.

Among the more unusual plants which add color to the displays in our Tropical Flowering House during March and April is *Tradescantia Warszewicziana.* It is a species of distinctive appearance. Superficially it bears but little resemblance to such hardy members of the genus as *Tradescantia virginiana* and still less to the Zebrinas which are often popularly referred to as Tradescantias. The decorative value of our subject rests not only upon the possession of attractive and long lasting inflorescences but also upon the pleasing form of the plant itself. Young specimens are vasiform, and are furnished to the ground with broad fleshy leaves. With age the plants develop stout, erect, branching stems. The inflorescence branches bear plantlets which afford a ready means of propagation. These may be grown on to flowering size within a year and will in that time occupy five-inch pots. Older specimens can be accommodated in pots measuring six inches or seven inches in diameter. *Tradescantia Warszewicziana* is not exacting in its cultural demands. It appreciates a well drained porous loam, exposure to sunshine, or at the most shade during the brightest of weather, and ample moisture at all times. It thrives under warm greenhouse (60° night temperature) conditions and in all probability would be well adapted for use as a house plant.

According to Annales de la Societe Royal D'Agriculture et de Botanique de Gand Vol. IV, p. 379 (1848) this Tradescantia was introduced (presumably as living plants) to the Berlin Botanic Garden by Warszewicz from Guatemala. The plants now in cultivation at the New York Botanical Garden were raised from material collected in 1936 in Chiapas, Mexico by Mr. Thomas MacDougall of New York City.

Tradescantia Warszewicziana is a rosulate glabrous perennial becoming caulescent and branching with age. The leaves are strap-shaped, acute, semi-fleshy, twelve to thirteen inches long and three to four inches wide, dull green. The inflorescence is lateral from the leaf axils, erect or arching, thyrsoid-paniculate, borne on a peduncle about eighteen inches long, usually viviparous from the axils of its branches. Individual flowers are in close, secund, scorpioid

racemes. The pedicels are fleshy, up to one-fourth inch long, transparent with a rosy-purple cast. The three sepals are about one-fourth inch long, concave, channeled, white with shadings of purplish-pink. The petals are broadly ovate, one-fourth inch long, bright rose-purple, abruptly acute at the apex. The six stamens are one-fourth inch long, the filaments thread-like, rose-purple below with a few colorless, multicellular hairs. The anthers are bright yellow, contrasting well with the white filament tip. The pistil is about one-fourth inch in length, the stigma colorless, capitate; the style thread-like, one fourth- to five-sixteenths inch long, purplish tinged; the ovary one-sixteenth inch long, ovoid, colorless, with a few scattered gland-tipped hairs.

T. H. EVERETT.

EXPLANATION OF PLATE. **Fig. 1.—Tip of a flowering branch. Fig. 2.—Leaf rosette and base of flowering stem. Fig. 3.—Calyx × 2. Fig. 4.—Petal and stamen × 2. Fig. 5.—Stamen × 4. Fig. 6. Gynoecium × 4.**

SANCHEZIA PARVIBRACTEATA

(Plate 683)

SANCHEZIA PARVIBRACTEATA

Native of tropical America?

Family ACANTHACEAE — ACANTHUS Family

Sanchezia parvibracteata Sprague and Hutch., Kew. Bull. 253. 1908.

Plants that are grown primarily for their decorative foliage are frequently not allowed to come into flower, thus giving rise to the popular idea that ornamental foliage plants do not "bloom." True it is that their flowers are often small and unattractive, and the plant is affected by their production so that its beauty is destroyed, necessitating the starting of a new plant. That some, however, do have showy flowers, is evidenced by our present subject, which, though infrequently grown, is a desirable foliage plant for the warm greenhouse, adding its attractive flowers in proper season to the scene.

As a genus, *Sanchezia* has an interesting history. Originally published by Ruiz and Pavon in the Flora Peruviana in 1794, it was lost sight of until 1847 when it was redescribed in Martius' Flora Braziliensis under the name of *Ancylogyne*. In 1866 Hooker, in Curtis' Botanical Magazine (pl. 5594), re-established the name *Sanchezia*. He commented upon the error of Ruiz and Pavon in referring the fruit of a Scrophulariaceous plant to their genus, which error was probably the cause of the publication of *Ancylogyne*, since there was no reason to assume other than that the flower and fruit in the Flora Peruviana belonged together. The name *Ancylogyne* has now become completely merged into *Sanchezia*.

The genus *Sanchezia* was named in honor of José Sánchez, Professor of Botany at Cadiz, Spain.

The present species was named in 1908 from a plant cultivated in the Royal Botanic Gardens at Kew which plant had been received from the Royal Botanic Gardens at Peradeniya in 1905. The species has never been found wild, but is assumed to be a native of tropical America, since that is the home of all of its relatives.

Sanchezia parvibracteata is an upright, subfleshy, little-branched shrub up to three or four feet tall. The stems are reddish-purple and four-angled. The leaves are opposite, four to ten inches long and two to four inches broad, bright blue-green with yellow veinings, paler beneath, the margin repand-crenate, the apex acuminate, the base abruptly cuneate. The inflorescence is terminal, few-branched, eight to ten inches long. The bracts are ovate, varying in

size according to position from one-fourth to one inch long, all acutish and more or less reddened. The flowers are clustered three to five together within the bractlets. The calyx segments are greenish yellow, about three-fourths of an inch long, oblong and obtuse, minutely glandular-pilose. The corolla is tubular, two to two and a half inches long, bright yellow, the five lobes closely recurved. The two fertile stamens are two to two and a half inches long, their filaments pilose, adnate to the top of the corolla tube. The two sterile stamens or staminodia are nearly an inch long and pilose. The ovary is glabrous, the style slender, about the length of the stamens. The fruit is an elastically dehiscent, six to eight seeded capsule.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Portion of stem and leaf. Fig. 3.—Corolla laid open.

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M.E. Eaton

PENSTEMON DISSECTUS

(Plate 684)

PENSTEMON DISSECTUS

Native of southern Georgia

Family SCROPHULARIACEAE — FIGWORT Family

Penstemon dissectus Ell., Sketch Bot. S. C. and G. **2**: 129. 1822.

One of North America's finest contributions to Horticulture is the genus *Penstemon*, a genus confined to this continent except for a single species in northeastern Asia. Among the approximately three hundred species our present subject stands out as unique in two ways. One of them is the dissected leaves. The other is the reversal of the usual manner of cut-leaved plants in which the basal leaves are dissected and the cauline ones entire—our present subject has entire basal leaves and dissected cauline ones. Its uniqueness is further emphasized by its great rarity—it is known from only five counties in south-central Georgia, and there is confined to rocky or dry sandy places. The area of its occurrence is known as the Altamaha Grit region, one of the more recent geological formations of the Atlantic coastal plain.

The plant was first described by Stephen Elliott in 1822 in his Sketch of the Botany of South Carolina and Georgia, the description based on specimens sent to him by James Jackson of Louisville, Georgia. Specimens are known collected by Croom some time previous to 1834, but the type of habitat was not known until the plant was rediscovered by R. M. Harper in the summer of 1903. It has subsequently been shown that in view of the restriction of the species to the Altamaha grit region, Jackson must have obtained his material fifteen or twenty miles south of Louisville, as it is there the "grit" outcrops. It is easy to understand how a plant as rare and local in its occurrence has escaped being introduced to cultivation, but it is hoped to remedy this situation in the near future.

Penstemon dissectus is a perennial herb twelve to eighteen inches tall, rarely reaching two feet. The leaves of the sterile shoots are three-fourths to an inch and a half long, spatulate to oblanceolate, entire or with three to five teeth or shallow lobes. The leaves of the flowering stems are one to two inches long, bipinnatifid, the segments linear and obtuse. The flowering portion rises on a peduncle two to three inches long above the uppermost leaves, the main bracts similar to but smaller than the leaves. The flowers are about three-fourths inch long, borne in a rather loose panicle on pedicels of varying length. The five calyx lobes are narrowly ovate, two- to three-sixteenths inch long, acute and spreading. The corolla is three-

fourths inch long, light rose-purple outside except the pale ventral side of the throat. Within, the tube and upper side of the throat are very pale, the lower side of the throat white, the white portion extending into the basal part of the three lower lobes of the limb, the pale and white portions with fine rose-purple veinings. The corolla-tube is about one-eighth inch long, abruptly inflated into the wide-open throat. The corolla-limb is about one-half inch across, the lobes orbicular-oblong, rounded at the tips. The sterile stamen is densely bearded and long exserted. The four stamens have glabrous anthers. The style and ovary are pubescent. The capsule is ovoid, three-eighths inch long, seated in the persistent, hardened calyx.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Portion of stem with cauline leaves. Fig. 3.—A cauline leaf. Fig. 4.—A basal leaf. Fig. 5.—Corolla laid open × 1½. Fig. 6.—Gynoecium × 2. Fig. 7.—Capsule.

PRIMULA OBCONICA

(Plate 685)

PRIMULA OBCONICA

Native of China

Family PRIMULACEAE — PRIMROSE Family

Primula obconica Hance, Journ. Bot. **18**: 234. 1880.
Primula poculiformis, Hook. f., Bot. Mag. pl. 6582. 1881.

Sixty-one years ago in Central China a primrose was discovered growing in the Ichang gorges of the Yangtse River which was destined to become one of the most popular of winter-flowering florists plants. True, the varieties of *Primula obconica* we cultivate in our greenhouses today are very different in appearance from their wild forebears for under domestication have been developed forms which from the gardeners' point of view show great improvement because of their more vigorous growth, larger flowers and wider range of desirable colors. Double flowered strains and varieties with fimbriated petals are also available. Our plate depicts one of the modern varieties.

For the introduction of *Primula obconica* into cultivation we are indebted to Charles Maries, collector for Messrs. Veitch and Sons of England, but the original description of the plant was made from a specimen collected by Thomas Watters of the British Consular Service. Both obtained their material in 1879 from approximately the same locality. Maries describes how he sent home surface soil taken from beneath Ferns, Primulas and other plants. The soil was stored in an old wine box and "sown" in a greenhouse more than twelve months later. Among the first plants to appear was a generous quantity of Primula obconica. Some slight variation was noticed in these plants but not until about ten years later did marked "breaks" begin to appear. (The History of Primula obconica Hance, under cultivation, with some remarks on the History of Primula sinensis Sab., Arthur W. Hill, Journal of Genetics, Vol. II, No. 1, Feb. 1912).

An unpleasant characteristic of *Primula obconica* which fortunately appears to be less evidenced in modern varieties than in earlier strains is its propensity for causing severe skin irritation in some persons if they come in contact with either the plant or with another individual suffering from this form of dermatitis. The irritation is incited by a yellow substance which issues from the hairs which cover the entire plant. This substance is soluble in alcohol and turpentine and susceptible individuals who inadver-

tently touch *Primula obconica* will do well to wash the affected surfaces immediately with one or other of these.

Primula obconica is usually raised from seed although some growers increase choice forms by division. The seed is sown in the spring in light soil and the plants are grown on to flowering size under cool greenhouse conditions. As a protection from strong summer sunshine light shade is provided and a moist atmospheric condition with free circulation of air at all times is essential for good results. The soil in which this Primula is grown may with advantage be somewhat heavier than that best appreciated by *P. sinensis*, *P. malacoides* and certain other greenhouse Primulas but it must be porous and well drained.

Primula obconica is a gregarious acaulescent perennial herb. The leaves are borne on loosely villose petioles three to five inches long. The leaf blades are orbicular-ovate, three to five inches long and three to four inches broad, the margins irregularly crenate and undulate, the base cordate with the sides of the sinus partially overlapping. The peduncles are axillary, eight to ten inches tall, short villose on the lower portion, the upper portion velvety puberulent. The inflorescence is umbelloid, each flower subtended by a narrowly oblanceolate bractlet at the base of the pedicel and basally adnate to it. Occasionally a second umbel arises above the other one. The pedicels are about an inch long. The calyx is broadly turbinate, about one-half inch long, the mouth open and flaring, shallowly five-lobed, the lobes very shortly mucronate at the apex. The corolla is rotate, the tube one-half inch long, the limb one and one-half to two inches in diameter. The five lobes are reniform, obovate, notched about one-third down from the apex. The flowers vary through many shades of rose, purplish-rose, pink, flesh color, white, lavender-blue, light violet-blue, in each case with a strong yellow-green eye. As with most Primulas the flowers are dimorphic, one type with the style shorter than the corolla tube and with the stamens protruding in the throat, the other type with the stamens shorter than the throat and the style equaling the throat in length.

T. H. EVERETT

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Leaf. Fig. 3.—Calyx and gynoecium, front and side view.

SOLANUM SISYMBRIFOLIUM

(Plate 686)

SOLANUM SISYMBRIFOLIUM

Native of tropical America

Family SOLANACEAE — NIGHTSHADE Family

Solanum sisymbrifolium Lam., Illustr. **2**: 25. 1793.
Solanum Balbisii Dun., Hist. Solan. 232. *pl. 3.* 1913.

Solanum is one of the larger genera of flowering plants, containing about one thousand species, the majority of them tropical and many of great horticultural value. That there are also some of economic value is shown by the presence in the genus of such valuable food plants as the potato and the tomato, as well as several of medicinal value. Any one accustomed to seeing potatoes in flower or the common and widespread horsenettle (*Solanum carolinense*) will recognize at once the affinities of our present subject. While not one of the choicest of the horticultural subjects in its genus, it is nevertheless, very useful for border plantings where tropical effect is desired. Therein its conspicuous potato-like flowers and cut leaves with yellow spines render it of some value. A violet colored form of it was once a popular subject in European gardens, but seems to have disappeared from cultivation. The form here illustrated was also once popular, but lack of popularity of the type of plantings wherein it can be used has caused it to fall into disrepute, and few gardeners care to grow such a viciously armed subject. Given the treatment accorded any half-hardy annual, it is easy to propagate, and looks quite well as a lower story planting with Castor-bean, hiding the taller plant's naked lower stem with its bushy growth. Our present subject, a native of tropical America, has become naturalized in the United States in the Gulf region from Florida to Louisiana, and is of casual occurrence there in waste-places and cultivated grounds.

Solanum sisymbrifolium is an upright, branching, prickly herb two or three feet tall, invested in all its parts with strong, bright yellow prickles. The stems are covered with a close stellate pubescence mingled with short glandular hairs. The leaves are alternate, four to eight inches long, once to twice pinnatifid, closely pubescent with stellate hairs on both surfaces. The inflorescence is a scorpioid raceme, the peduncular portion two to four inches long, the flowering portion somewhat longer. The pedicles are one-fourth to one-half inch long. The five calyx-lobes are lanceolate and acute. The corolla is rotate, an inch and a half in diameter, white and blue, the lobes broadly ovate. The five stamens are about three-eighths inch long, their anthers opening by terminal pores. The ovary is sparsely

hairy, the style one-half inch long, the stigma two lobed. The fruit is a berry one-half to three-quarters inch long, included in the accrescent calyx, the lobes of which at length recurve, exposing the scarlet fruit.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Tip of flowering branch. Fig. 2.—Calyx and gynoecium × 1½. Fig. 3.—Two lobes of calyx and a stamen nat. size. Fig. 4.—Fruit enclosed in calyx. Fig. 5.—Calyx reflexed exposing fruit.

GLYCOSMIS CITIRIFOLIA

(Plate 687)

GLYCOSMIS CITRIFOLIA

Native of tropical Asia

Family RUTACEAE — RUE Family

Limonia citrifolia Willd., Enum. Hort. Berol. 448. 1809.
Glycosmis citrifolia Lindl., Trans. Hort. Soc. **6**: 72. 1826.

The plant figured in the accompanying plate has been growing in the conservatories of the New York Botanical Garden since 1901. Our records indicate that it was originally obtained from the National Botanic Garden, Washington, D. C. As a decorative greenhouse subject its effectiveness is due to the possession of attractive evergreen foliage and to the fact that it bears berries of pleasing appearance which remain in good condition over a long period. Measuring fully half an inch in diameter the berries are smooth, semi-transparent and are orange-pink in color. Their skin is membranous and encloses a slightly mucilaginous flesh which tastes sweet and has a distinctly carroty flavor. In a paper read before the Horticultural Society of London in 1824 Lindley suggested that "It is probable that the plant will be cultivated as a fruit for the dessert, for which the singular appearance of its berries, and their agreeable flavor recommend it."

To the best of my knowledge *Glycosmis citrifolia* has never attained any popularity as an edible fruit but it should be worth trying by those who find pleasure in gastronomic experiments. It is suitable for cultivation in the warmer parts of the Southern States and has become naturalized on Key West.

From Lindley's discussion we also learn that our subject was first introduced to cultivation in 1821 when it was brought from China by one Captain Jamieson, the commander of a merchant ship who collected on behalf of the Horticultural Society.

Under warm greenhouse conditions *Glycosmis citrifolia* presents no difficulties in the matter of cultivation. It thrives in a well drained soil and seems to appreciate light shade during the summer months. The soil should be rich but porous and at potting time should be packed firmly about the roots.

Increase is readily accomplished by cuttings taken in the spring or early summer and inserted in a propagating bed where mild bottom-heat is available. While I have had no personal experience in raising this plant from seed it would seem likely that this method of propagation would also prove entirely satisfactory.

Glycosmis citrifolia is a smooth, unarmed, evergreen shrub up to ten or twelve feet tall, the branches with close-fitting green bark. The leaves are leathery and dark green, alternate, with one to three leaflets which are elliptical and entire, tapering at both ends, three to five inches long. The inflorescence is terminal and axillary, the flowers small and white, about one-eighth inch long. The five calyx-lobes are orbicular-ovate, densely ciliate. The five petals are obovate, glandular-punctate. The five stamens have clavate filaments and yellow anthers. The stigma is capitate, the style stout and short. The ovary is glabrous, glandular-punctuate. The fruit is an orange-pink, spheroidal berry with one or two large seeds embedded in the thin, translucent, watery pulp. The seeds are brown with distinct orange veinings.

T. H. EVERETT.

EXPLANATION OF PLATE. Fig. 1.—Flowering, fruiting and leafy branch. Fig. 2.—Petal × 6. Fig. 3.—Gynoecium and a stamen × 6. Fig. 4.—Front view of stamen × 6. Fig. 5.—Seed × 2.

RONDELETIA LEUCOPHYLLA

(Plate 688)

RONDELETIA LEUCOPHYLLA

Native of Mexico

Family RUBIACEAE — MADDER Family

Rondeletia leucophylla H. B. K., Nov. Gen. & Sp. **3**: 395. 1820.
Rondeletia elongata Bartl., DC. Prodr. **4**: 409. 1830.
Bouvardia discolor Hook. & Arn., Bot. Beechey Voy. 428. 1840.
Rondeletia dubia Hemsl., Diag. Pl. Mex. 28. 1879.

Among the many interesting and ornamental plants sent from Oaxaca and Chiapas in southern Mexico by Mr. T. MacDougall, *Rondeletia leucophylla* is one of the more showy-flowered subjects of horticultural merit. It made its advent in the form of seeds collected from a "red verbena-like shrub," which was frequent along streamsides and sometimes in the rocky stream-bed. A plant of this shrub in flower is very attractive, its every branch terminated by a loose head of red flowers, pleasingly contrasted against the dark green upper leaf-surface and the whitened under-surface. It is easily grown from seed or cuttings, but must be kept in an evenly warm house, as any drop in temperature will be followed by a yellowing of the leaves and imperfect flower development.

Rondeletia leucophylla is a shrub up to four feet tall, the stem and mature branches clothed with a loose-fitting brown bark, the young growth densely white woolly. The leaves are opposite, entire, deep green and sparsely hairy on the upper surface, the lower surface covered with a dense white tomentum. The leaf-blades are two to four inches long, elliptic to oblong-elliptic or ovate, the apex short-acuminate. The stipules are brown, one-fourth to three-eighths inch long, narrowly lanceolate, thin and persistent, hairy on the outer side. The inflorescence is terminal on the branches and branchlets, cymose-paniculate, the peduncle tomentose, one to three inches long. The flowers are numerous, about three-fourths inch long and one-half inch across. The corolla is rosy-crimson, the four lobes spreading, orbicular-obovate, glabrous on the inner face, the tube and lobes white tomentose on the outside. The four stamens are usually shortly exserted from the corolla-tube, occasionally one is much shorter than the others. The hypanthium is urceolate, white tomentose, the four calyx-lobes linear or oblong, about one-sixteenth inch long, erect-spreading. The style is about one-half inch long, the two stigma lobes green. The fruit is a nearly globular capsule, about one-fourth inch long, white-woolly and capped by the persistent calyx-lobes. The numerous minute seeds are pale brown.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—End of a flowering branch showing inflorescence. Fig. 2.—A full grown leaf. Fig. 3.—Calyx and gynoecium × 2. Fig. 4.—Section of corolla showing two lobes and a stamen × 2.

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AND

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"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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PYRRHEIMA FUSCATA

(Plate 689)

PYRRHEIMA FUSCATA

Native of southern Brazil

Family COMMELINACEAE — SPIDERWORT Family

Tradescantia fuscata Lodd. Bot. Cab. **4** pl. 374. 1819.
Pyrrheima Loddigesii Hasskl. Flora **52**: 366. 1869.
Pyrrheima fuscata Backer, Handb. Fl. Java **3**: 37. 1924.

On the slopes of the Corcovado, one of the spectacular rock domes which ring the beautiful harbor of Rio de Janeiro, was discovered in the early 1800's, this attractive species of spiderwort. Its handsome, brown-hairy leaves, stemless habit of growth, and the peculiar structure of the inflorescence raise the question immediately as to whether it be truly a member of the genus *Tradescantia,* to which it was originally assigned. C. Hasskarl, writing in Flora in 1869, erected the genus *Pyrrheima* to contain this plant, basing his separation on the stemless habit of growth, the absence of trichomes on the filaments, the form and structure of the anthers, and the number of ovules in each cell of the ovary. C. B. Clarke, who monographed the Commelinaceae in De Candolle's Monographiae Phanerogamarum, accepted the genus as distinct, but subsequent authors ignored it. In Engler & Prantl's Pflanzenfamilien it was omitted even as a synonym, but characters were given the genus *Tradescantia* which would definitely exclude this species. Clarke, however, erred in using the combination *P. Loddigesii* as had Hasskarl, and it remained for Backer in his Handbook of the Flora of Java to make the proper combination for the name of the plant. In spite of the failure of so many workers to place this plant in its proper position as a distinct genus, there should be no regrets in removing it permanently from Tradescantia, for not only are all the characters assigned to it by Hasskarl correct, but the absence of the bracteal leaves so typical of *Tradescantia,* and the compound character of the peduncles are also unmatched in that genus and furnish further distinguishing characters.

The name *Pyrrheima* comes from two Greek words meaning tawny cloak, in reference to the covering of tawny hairs on the plant.

Pyrrheima fuscata is a perennial herb with a short, underground stem. The leaves are six to eight inches long and two to three inches broad, acutish, narrowed at the base into a short petiole, dark green above with whitish midportion, purplish red beneath, covered all

over with dense, rust-colored hairs. The flower peduncles, also shaggy-hairy, arise from the crown of the plant. These peduncles, one-half to one and one-half inches long usually bear three short-pedicelled flowers at their summit. The three calyx-lobes are one half inch long, ovate-lanceolate, concave, tawny-hairy as are the leaves and peduncle. The three petals are rose-purple, five-eighths of an inch long, orbicular-ovate, often erose towards the apex. The six stamens have naked slender white filaments and whitish anthers. The ovary is covered with long hairs, the cells each with three to five ovules. When the ovate capsule is mature, there will be found one to four seeds each in two of the cells, the third cell usually with one or no seeds. The seeds are trapezoidal, roughened, brownish ash-colored.

E. J. ALEXANDER.

EXPLANATION OF PLATE. **Fig. 1.—A flowering plant.**

JUSSIAEA DIFFUSA

(Plate 690)

JUSSIAEA DIFFUSA

Creeping Primrose-willow

Native of southeastern United States, tropical America and Asia

Family ONAGRACEAE — EVENING-PRIMROSE Family

Jussiaea diffusa Forsk. Fl. Aegypt. Arab. 210. 1775.
Jussiaea repens Auth. var. not L.
Jussiaea Swartziana DC. Prod. 3 : 54. 1828.
Jussiaea repens var. *glabrescens* Kuntze, Rev. gen. 1 : 251. 1891.

With the rising interest in water gardening, aquatic plants that usually must be admired in their natural haunts are beginning to be seen in cultivation more and more frequently. Our present subject has not yet appeared under cultivation, but is certainly one of those whose advent would furnish an interesting variation in pool or pond gardens. Its habit of sprawling across the surface of the water like a great water-strider, with its leaves flat on the surface, and its brilliant yellow flowers upraised, is quite a different note from the usual cultivated water plants. The flowers only last for a single forenoon, but are freely borne anew each day. Its sister species, *J. grandiflora*, with flowers twice as large, is even more showy.

In its natural stands, the plant is fairly plentiful in swamps and still water throughout the southeastern coastal regions and northwestward to Illinois, Kansas and Texas, thence on down into the tropics of both America and Asia. Nowhere, however, does it make a showing better than in the swamplands southwest of New Orleans, where some of the large submerged areas are literally studded with its golden stars.

There have been numerous authors who have considered this plant to be the Linnaean *Jussiaea repens*, but such could hardly be the case as that plant has white flowers with villous hypanthium and sepal exterior, and shorter and broader, sulcate capsules with bractlets well above the tapered base of the capsule.

The genus *Jussiaea* received its name from Linnaeus, in honor of Bernard de Jussieu, founder of the Natural System of Botany.

The creeping primrose-willow is a marsh or aquatic herb with long, smooth, green or reddish-tinged stems. The leaves are alternate, elliptic to broadly spatulate or obovate-elliptic, entire, bright yellow-green, on petioles one-half to two inches long. The flowers are borne from the leaf-axils on peduncles about one inch long, with

two minute bractlets at the base of the nearly sessile, cylindrical hypanthium. The five calyx-lobes are lanceolate, acute, about three-eighths of an inch long. The petals are obovate, short-clawed, one-half to three-fourths of an inch long, bright yellow with a darker yellow blotch at the base. The ten stamens are erect, appressed to the rather stout style, which enlarges upward into a capitate stigma. The fruit is a cylindrical capsule about an inch and one-half long, tapered at the base and usually crowned with the persistent, somewhat enlarged, calyx-lobes. The seeds are in one row in each cell, four-sided, firmly embedded in a spongy covering.

E. J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Tip of a flowering stem. Fig. 2.—Gynoecium and calyx ×2. Fig. 3.—A petal. Fig. 4.—Mature fruit.

2

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3

BRODIAEA CAPITATA

(Plate 691)

BRODIAEA CAPITATA

Blue Dicks

Native of western United States

Family ALLIACEAE — ONION Family

Brodiaea capitata Benth. Pl. Hartw. 339. 1857.
Dichelostemma capitatum Wood. Proc. Acad. Philad. **1868**: 173. 1868.
Brodiaea insularis Greene, Bull. Calif. Acad. **2**: 134. 1886.
Dipterostemon capitatum Rydb. Bull. Torr. Club **39**: 111. 1912.

The Brodiaeas native to the western United States are more reliable in eastern gardens than are most bulbous subjects which hail from that region. Most of them persist and increase slowly if they are planted under favorable conditions, which seem to consist of a gritty, well drained soil and a sunny exposure. They are perhaps, best suited for cultivation in rock gardens but some few might well be given rather choice positions towards the front of carefully tended mixed herbaceous borders—here they would add a note of the unusual and should prove happy.

Among those suited for such a purpose is *Brodiaea capitata*—the Blue Dicks of California. This species enjoys a natural range extending from southern Oregon to Lower California and into Arizona and is, according to Jepson, "very common on hillsides and plains though the Coast Ranges, Great Valley, Sierra Nevada foothills and Southern California." It is not found at high elevations and but rarely in the deserts.

Like most Brodiaeas this species must be massed for good effect and the corms should be planted in the fall closely together at a depth equal to twice or thrice their diameter.

In addition to its usefulness in the garden the Blue Dicks makes a rather attractive indoor plant. When used for this purpose the corms should be set closely together in pans of rich light soil in the fall; the pans are then plunged to their rims in cinders, sand or peat-moss in a cold frame where they remain until the beginning of January.

Early in the year they are brought into a cool greenhouse and are grown on under airy conditions and in a sunny position. The soil must be kept moist throughout the growing period. Occasional feedings with liquid organic fertilizers are beneficial. After flowering the plants are kept in a growing condition as long as possible, but when they finally become dormant, water is withheld and the

pans are turned on their sides and placed in a cold frame until it is time to re-pot the corms and start them into growth again the following fall.

One of the best tests of popularity to which a plant may be subjected is the number of common names applied to it in its native region. Under such a test, *Brodiaea capitata* comes through with flying colors as its various local names attest—blue dicks, cluster-lily, grass-nuts, wild hyacinth, spanish-lily, hog-onion, California hyacinth, wild-onion, nigger-toes, nigger-babies, sugar-lump, Indian-lily, cacomite, covena, and saita. The majority of these names refer to the edibility of the corms, which have a pleasant, sweet, nutty flavor, and are as eagerly sought after by children of today as they were by the Indians in earlier days. Children, of course, eat them at any time, but the Indians preferred them just after flowering. They were, with song and ceremony, dug with sharp-pointed sticks and eaten either raw or cooked. The cooking was done in a pit lined with heated rocks, the corms placed therein in layers between green leaves, all covered over with earth and a fire lighted on top. The pit was opened after a day or so and the corms were eaten, and very sweet they were on account of the long, slow cooking.

The blue dicks or grass nuts in fact, hold quite as warm a place in the affections of Californians as does the California poppy and are much used in floral decorations both in the home and in flower carnivals.

The genus *Brodiaea* was named in honor of one James L. Brodie of Brodie House, Elgin, Scotland. Nearly all the species are confined in natural occurrence to the western United States where there are about thirty species.

Brodiaea capitata is a scapose, cormous herb, the fibrous-coated corm flattened and crocus-like and measuring to about three-quarters of an inch in diameter. The leaves are few, narrowly linear and are commonly rather shorter than the scapes. The scapes are one to two feet high, somewhat flexuous, each terminating in a many-flowered capitate umbel, which is subtended by a few dark purple bracts. The flowers are variable in color, ranging from white to deep-blue-purple. They are up to two-thirds of an inch long. Each has six spreading, obtuse, elliptic-ovate perianth segments which are a little longer than the tube and six anther-bearing stamens, three of which are large and three small.

T. H. EVERETT.

EXPLANATION OF PLATE. Fig. 1.—A flowering scape. Fig. 2.—The bulb, showing leaves and base of the flower scapes. Fig. 3.—Two bracts. Fig. 4.—A flower, laid open × 2.

CYRTANTHUS MACKENII COOPERI

(Plate 692)

CYRTANTHUS MACKENII VAR. COOPERI

Yellow Ifafa Lily

Native of South Africa

Family AMARYLLIDACEAE — AMARYLLIS Family

Cyrtanthus lutescens Hook. Bot. Mag. pl. 5374. 1863. Not Herb.
Cyrtanthus lutescens var. *Cooperi* Baker, Handb. Amaryllid. 58. 1888.
Cyrtanthus Mackenii var. *Cooperi* R. A. Dyer, Herbertia **1939**: 79. 1940.

Much confusion has arisen because Baker (Handb. Amaryllid. 58, 1888, and Fl. Cap. **6**: 225, 1896) described this color phase of *C. Mackenii* as a variety of *C. lutescens* Herb. The situation has been clarified by R. A. Dyer in "A Review of the Genus Cyrtanthus" Herbertia, Vol. **6**: 79, 1939. Dyer arrives at the conclusion that more than one species was involved in Baker's conception of *C. lutescens*, and that Baker's variety *Cooperi* properly belongs with *C. Mackenii*. The older binomial *C. ochroleucus* Burch. replaces *C. lutescens* Herb. and a clear distinction is drawn between *C. ochroleucus* with leaves 1–2 mm. broad, and *C. Mackenii* with leaves 5 mm. to 1 cm. broad.

In gardens *C. Mackenii* var. *Cooperi* is usually grown as *C. lutescens* and this undoubtedly accounts for Col. Grey's statement (Hardy Bulbs Vol. **11**: 28, 1938) regarding *C. Mackenii;* "I can see no botanical difference between it and *C. lutescens* with yellow flowers to which Dean Herbert gave specific rank. I have received both plants from South Africa collected as *C. Mackenii*. They are growing side by side, and appear to me to be indistinguishable, apart from their difference in colour."

At the New York Botanical Garden bulbs of *C. Mackenii* var. *Cooperi* have been received under the name *C. lutescens,* both from South Africa and from Kew. The plants from which our illustration was made came from the latter source.

In warmer sections of the country this *Cyrtanthus* is hardy but it will not stand much frost and over most of the United States it must be considered only as a subject for the cool greenhouse—or perhaps, under favorable circumstances, for the window garden. It is essentially a collector's item; pretty in a quiet sort of way but lacking the brilliance and display qualities of many other South African bulbous plants. The blooms are produced rather spasmodically over a long period from fall to late winter.

It thrives in a light, well-drained, sandy soil. When grown

indoors, the bulbs should be set closely together in six-inch pans and covered to a depth of about one inch. They require essentially the same culture conditions as Freesias.

The genus *Cyrtanthus* in its natural distribution is confined to Africa south of the equator. The central area of distribution is in Natal and the eastern Cape region. These plants in the wild occur principally in moist places in the mountains, in open grassland or on cool rock ledges. They do not occur in the excessively dry areas. Our present subject grows in moist places near the coast in southern Natal and the northeastern Cape region, usually associated with the typical, white-flowered form.

The yellow Ifafa lily is an acaulescent plant arising from a tunicate bulb one or two inches in diameter, contracted upwardly into a neck, increasing by budding at the base. The two to six leaves, present at flowering time, are linear, six to eight inches long and one-fourth to three-eighths of an inch broad, bright yellow-green, somewhat reddish spotted at the base. The peduncle is hollow and longer than the leaves. The two spathe valves are lanceolate, three-fourths of an inch to an inch and one-half long, green, becoming brown and scarious as the flowers develop. The pedicels are usually shorter than the spathe-valves. The flowers, four to ten in number, are slightly curved and erect or arching. The perianth is light yellow, the tube about two inches long, gradually dilated upwards, the lobes about one-fourth inch long, oblong-orbicular strongly recurved. The six stamens are in two series near the top of the perianth-throat, the filaments very short, the anthers of the upper series barely exserted. The slender style is exserted, the stigma three-parted, the tips bristly. The fruit is an oblong, three-valved capsule, loculicidally dehiscent, the seeds flattened and black.

T. H. EVERETT.

EXPLANATION OF PLATE. Fig. 1.—A flowering scape. Figs. 2, 3.—Leaves. Fig. 4.—A flower, laid open.

CRATAEGUS HARBISONI

(Plate 603)

CRATAEGUS HARBISONI

Harbison's Haw

Native of Tennessee

Family MALACEAE — APPLE Family

Crataegus Harbisoni Beadle, Coult. Bot. Gaz. **28**: 413. 1899.

One of the outstanding challenges to the professional botanist is the genus *Crataegus* which reaches its greatest development as well as its greatest complexity in the eastern United States. Nearly a thousand species have been described in the genus, only about ninety of which are in Europe and Asia. There is little doubt but what future study, especially of living plants in their natural stands, will greatly reduce the number of distinct species, but there seems little likelihood of this happening in the near future, as there is scarcely a plant student today who will dare to even attempt identification of a specimen of this most difficult genus. So confused and minute are the specific distinctions as to make it appear that every colony of plants is a separate species. Such a situation is unparalleled in North American flowering plants and cannot be clarified by herbarium work, but only by years of study in the field of both flowering and fruiting plants.

The thorns, pig-apples, or haws, as they are variously called, are an attractive group horticulturally, as they are easily grown under many trying conditions, nearly all hardy, and quite showy in both flower and fruit. They are all shrubs or small trees of varying size, well shaped in their form of growth, and should be much more frequently used in decorative plantings. Some few species are of clear enough identity to make for assurance of what to expect from the plant, and those few are becoming increasingly popular. Our present subject, being one of the large-fruited kinds with bright fall coloring of its foliage, is one of the desirable types, and in spite of its great rarity as a wild plant, is not rare in cultivation. It is native to a small region centering around Nashville, Tennessee, where it was discovered by the veteran collector, T. G. Harbison, who did so much to make known to science and to cultivation many of the rare woody plants of our southeastern states.

Harbison's haw is a small tree fifteen to twenty-five feet tall. The bark of the trunk of mature trees is slightly fissured and scaly, ash-gray, frequently spiny. The bark of the branches is greenish

gray, the growth of the season reddish-brown. The branches and twigs are usually armed with stout, black-brown spines two inches long. The leaves are broadly ovate to obvate, the blades two to four inches long, irregularly double-serrate, sometimes incisely lobed, dark, glossy green and scabrid on the upper surface, paler below and pubescent on the principal veins; the petioles about one-half inch long and bearing black-tipped glands as does also the tapered base of the blade. The stipules are about one-fourth inch long, lunate, their margins glandular pectinate. The flowers are borne in corymbs about two and one-half inches in diameter, the branches and pedicels silky-pubescent. The pedicels are one-fourth to one inch long, each bearing one to three, pectinately glandular, linear bractlets. The hypanthium is silky-hairy, the sepals likewise so, about one-fourth inch long, linear-lanceolate, pectinately glandular-serrate. The stamens average about twenty, with yellow anthers. The pistils number three to five. The petals are spread so as to form individual flowers about three-fourths of an inch across. The fruit is globose, red or orange-red, three fourths of an inch across, pubescent or smooth, punctate, ripening in October. The three to five nutlets are one-fourth to three-eighths of an inch long, the dorsal side with one or two grooves, the lateral surfaces smooth.

E. J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering spray. Fig. 2.—A leaf with fall coloration. Fig. 3.—A fruiting branch.

DENDROBIUM CHRYSOTOXUM

(Plate 694)

DENDROBIUM CHRYSOTOXUM

Golden-arched Dendrobium

Native of Lower Burma

Family ORCHIDACEAE — ORCHID Family

Dendrobium chrysotoxum Lindl. Bot. Reg. 33, sub pl. 19. 1847.

As a stove house orchid there are few to compare with *Dendrobium chrysotoxum.* Even though in a family over-abundant with showy subjects, it should rightfully take a place among the leaders of cultivated orchids. Its ease of culture and free flowering habits, generously producing an abundance of clear golden yellow flowers, are alone sufficient to warrant high praise. Furthermore we can say its floriferous qualities are hardly more than equal to its keeping qualities, which under favorable conditions will last on the plant nearly a month. These are but a few of its many commendable traits making it so desirable as a worthy subject for more extensive cultivation.

Dendrobium chrysotoxum is widely distributed over the plains and mountains of Lower Burma. It is said to be rather abundant in the Arracan Mountains and on the Mountains of Moulmein, often ascending to elevations of 2500 to 3000 feet. At high elevations the pseudobulbs are much more compact than those of lower elevations or when grown under shadier conditions.

Though the culture of this orchid does not present any particular difficulty, there are, it is true, certain requirements we must first fulfill for its successful culture. Like other members of the evergreen group of Dendrobiums, it most certainly requires a resting period,—a period in which the plants are watered sparingly, subjected to a free circulation of air, maximum light and lower temperatures, and at no time should they be treated so as to cause the shrivelling of the pseudobulbs. The plants normally complete their annual growth about the end of August, at which time they can be removed to a cooler house and cared for in the prescribed fashion until the following February. At this time it will noticed that flower buds have developed just below the leaves on many of the pseudobulbs. The plants may then be returned to the warm house to flower and once again commence active growth.

Shortly after flowering, new growths will be apparent from the

base of the previous season's pseudobulbs. It is at this time that attention should be given to potting. However, it is far better to avoid this, unless of course the plants have outgrown their receptacles or the fiber is so decayed or sour that it is incapable of supporting healthy growth. Cypress baskets or perforated pots or pans are to be preferred as receptacles for these permit a better aeration of the fiber, a considerable aid in maintaining a sweet and amiable medium. The container need only be large enough to accommodate the plants comfortably. As a potting medium osmunda fiber should be used, to which only a small portion of sphagnum has been added. This should be well packed about the plants so that they are held firmly in place. Attention to these and other details will be well reflected in the health of the plants.

Such other requirements as water, light, and air during their growing period are much the same as for other orchids. It should be remembered however that this species, like other members of the genus, does its best when suspended from the roof of the greenhouse.

Dendrobium chrysotoxum is one of several species in the group of tropical evergreen Dendrobiums. It is characterized by its stout, ribbed and joined, club-shaped pseudobulbs, which are covered with a brownish white membranous sheath and bearing at their extremities two to four oblong, acute, coriaceous leaves. The inflorescence in its typical form arises from the two-year-old pseudobulbs, and only occasionally from the others. It is an arching, drooping raceme, appearing from just below the leaves, with from six to twelve golden yellow flowers spaced rather freely on a long peduncle. The flowers are nearly two inches across with sepals and petals broadly spreading. The sepals are slightly shorter and about half as wide as the petals which are broad ovate in shape. The lip is wide-spreading and undivided, with an attractive fringed and ciliated margin. It is of a clear golden yellow, much the same as the sepals and petals. The base of the lip is contracted, and has a prominent blunt spur. The color of the disc is somewhat deeper yellow with deep orange markings in a semicircle at the base of the blade. The column is short with a blunt tooth at each side of the anther sac.

JOSEPH W. TANSEY.

EXPLANATION OF PLATE. Fig. 1.—A portion of an inflorescence. Fig. 2.—A pseudobulb, leaves and base of the flower scape. Fig. 3.—Lip, side view. Fig. 4.—Column, side view × 4. Fig. 5.—Column, face view × 4. Fig. 6.—Stamen × 6. Fig. 7.—Pollinia × 6.

GARDOQUIA COCCINEA

(Plate 695)

GARDOQUIA COCCINEA

Scarlet Calamint

Native of the east Gulf Coast region of the United States

Family LABIATAE — MINT Family

Cunila coccinea Nutt. ex Hook. Exot. Fl. 3. pl. 363. 1825.
Melissa coccinea Spreng. Syst. 2 : 224. 1827.
Gardoquia Hookeri Benth. Lab. Gen. et Sp. 401. 1832–6.
Calamintha coccinea Gray, Syn. Fl. 2[1] : 360. 1878.
Clinopodium coccineum Kuntze, Rev. Gen. Pl. 2 : 515. 1891.
Gardoquia coccinea **Alexander, comb. nov.**

Over a hundred years ago there was discovered in the Gulf Coast region of Florida this bright red-flowered calamint. There was for many years following, considerable confusion among botanists as to which genus it should be referred. George Bentham, the earliest reliable writer on the complexities of the mint family, recognized its relation to the tropical American genus Gardoquia, but unfortunately ignored its older specific name and named it Gardoquia Hookeri. Botanists since then have bandied the plant from one genus to another, always using the older specific name *coccinea* but never making the combination *Gardoquia coccinea* which is herewith made. The plant is somewhat anomalous in the genus *Gardoquia* on account of its bilabiate calyx, but the structure of the anthers, the corolla, and the characteristic venation and structure of the calyx so obviously point to that genus as to overwhelm the minor character of the amount of fusion of the upper calyx-lobes.

This is one of those plants which had its original home on the Oligocene island of peninsular Florida, and with the rising of the surrounding area above the sea, spread into favorable habitats through northern Florida and along the sandhill region westward to Mississippi and northeastward into southern Georgia. In these areas it is an attractive sight when in bloom and seems quite out of place in the white sand where it usually grows.

When originally discovered, it was for a time quite popular in European gardens, but has since disappeared from cultivation. It is not quite hardy at New York City, but is doubtless so further south, and succeeds quite well in a soil with a strong admixture of sand. The shrub is of rather loose, straggling growth, its chief decorative value being the brilliant color of the flowers.

The genus *Gardoquia* was dedicated by Ruiz and Pavon to honor

Don Diego Gardoqui, Minister of Finance under Charles IV of Spain who was instrumental in promoting the publication of the Flora Peruviana.

The scarlet calamint is a shrub two to three, or rarely four feet tall, with slender puberulent branches covered with loose-fitting brown bark. The leaves are rather far apart, obovate to spatulate, one-fourth to three-fourths of an inch long, puberulent, especially when young, and resinous punctate. The flowers are in axillary verticels, one- to three-flowered, each flower subtended at the base of its pedicel by two spatulate bracts about one-eighth of an inch long. The calyx is three-eighths to one-half inch long, closely puberulent and resinous punctate, bilabiate, the upper lip three-notched, the lower lip with two lanceolate, acute lobes, the pubescence of the lobes of both lips more densely soft hairy than the remainder of the calyx. The calyx is otherwise naked within except for a ring of long hairs which closes the throat. The corolla is pubescent outside, about one and one-half inches long, strongly bilabiate, bright scarlet, yellow outside on the lower side of the throat, yellow inside on both sides of the throat and tube, the yellow portion red-streaked, and spotted on the central portion of the lower lip. The four stamens are paired, the two upper with the free portion of the filaments only half the length of the free portion of the lower ones. The filaments are slender, whitish and smooth, the anthers yellow, united by a large brown connective. The pistil is yellowish, longer than the corolla, very slender, the stigma reddish, unequally two-parted. The fruit consists of four brown oblong-globular nutlets, their surface finely pitted.

E. J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering branch. Fig. 2.—Calyx × 2. Fig. 3.—Corolla, laid open. Fig. 4.—Gynoecium.

STREPTOCARPUS REXII

(Plate 696)

STREPTOCARPUS REXII

Native of South Africa

Family GESNERIACEAE — GESNERIA Family

Didymocarpus Rexii Hooker, Exot. Flor. 3. **227** : 1827.
Streptocarpus Rexii Lindley, Bot. Reg. **14**, pl. 1173 : 1828.

Most gardeners consider *Streptocarpus Rexii,* sometimes referred to as Cape Primrose, outclassed by modern hybrids. As far back as 1886 it was one of the original parents used in breeding a race with larger flowers and a wider variety of colors, thus producing something more valuable to gardeners generally. In recent years further improvement in the size of the flowers has stimulated interest in the genus.

Amateur gardeners in this day and age are constantly inquiring for suitable plants to grow in their greenhouses. Especially do they ask for plants that are not hypersensitive to temperature or, indeed, exacting as to elaborate cultural details. Both *S. Rexii* and the hybrids can be recommended as plants that require but little coddling.

They are easily raised from seed, and as soon in Spring as a minimum temperature of 55°–60° can be maintained, seed may be sown on a finely sifted surface of rather sandy compost. The seeds are tiny and should be scattered on the soil after it has been thoroughly saturated. This should obviate further watering until germination has been completed, especially if the seed container is covered with a sheet of glass and kept shaded. Transplant the tiny seedlings into a similar soil medium, and when large enough plant singly into small pots. Further potting into a well drained medium will be required as roots develop. A five-inch pot should suffice for final growth of the first year. Slightly larger pots may be used for a second year's culture. Rarely after that is it profitable to keep them. They are at home in a shady situation, and will benefit from copious supplies of water. Light applications of any recognized complete greenhouse fertilizer may be applied advantageously just prior to the appearance of the flowers.

Although one may divide the crown in spring or propagate from leaf cuttings, neither method has been considered satisfactory. Plants raised in this way are never so robust, and consequently the flowers are of inferior quality.

The genus, consisting of about 30 species, is indigenous to Africa and Madagascar. Literature tells us that *S. Rexii* flowered at Kew for the first time in 1826 from seed collected in S. Africa in forest lands on the estate of one George Rex at Knysna, in the Cape Province, and from that point the plant extends northward along the coast through eastern Transvaal.

S. Rexii is a fibrous-rooted, acaulescent perennial with from six to eight prostrate or sub-erect leaves to one plant. These leaves are tongue-shaped, pubescent, with crenate margins and are four to seven inches long, tapering towards the base into what might be considered a footstalk. The upper surface is yellow green, bullate and deeply veined, while the under-side is a very pale green with the veins markedly prominent. From two to five simple scapes appear from the base of the leaves, each bearing one, rarely two flowers. These scapes are up to seven inches high, pilose, purple brown to green with two opposite bracteoles above the middle. The pedicel is up to three-fourths of an inch long. The five sepals, each three-eighths of an inch long, are lanceolate and pubescent. The corolla is two inches long, pubescent, of a pleasing blue lavender, paler on the outside: the tube one and one-half inches long: the limb five-parted, the two upper lobes the smaller; the others have attractive deep purple lines, three on the middle or lower one, and two on each of the remaining two. The two stamens, with curved white filaments, are inserted near the center of the corolla tube. The pistil is linear and pilose; the style greenish purple to white towards the two-parted stigma. The capsule, four to five inches long, is erect—more so than represented in the figure. It is two valved, the valves twisted spirally. The seed is very minute.

J. G. ESSON.

EXPLANATION OF PLATE. Fig. 1.—A flowering scape. Fig. 2.—A leaf. Fig. 3.—Corolla, laid open. Fig. 4.—Stamens, front and back view × 2. Fig. 5.—Gynoecium × 2. Fig. 6.—Mature fruit.

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Corrections for Addisonia
Volume 21, No. 4

EXPLANATION OF PLATE 697.

Fig. 1.—An inflorescence. Fig. 2.—A portion of the inflorescence scape showing bracts. Fig. 3.—An inner and an outer perianth part. Figs. 4 & 5.—Two stamens ×3. Fig. 6.—The gynoecium ×3. Fig. 7.—A mature capsule. Fig. 8.—A dehisced capsule and a seed. Fig. 9.—Upper portion of a leaf.

EXPLANATION OF PLATE 698.

Fig. 1.—An inflorescence. Fig. 2.—A flower laid open. Fig. 3.—The tip of a leafy stem.

EXPLANATION OF PLATE 700.

Fig. 1.—Top of a flowering stem. Fig. 2.—Flower with the two large petals removed, showing the different types of stamens, the small petal, calyx, and gynoecium ×2. Fig. 3.—The capsule ×2. Fig. 4.—Top and base of leafy stem.

EXPLANATION OF PLATE 703.

Fig. 1.—Tip of a flowering branch. Fig. 2.—A petal ×2. Fig. 3.—A stamen, front and side views, ×3. Fig. 4.—Calyx and gynoecium ×3. Fig. 5.—A late-season flower. [Fig. 6.]—Base of plant with rootstock and roots.

EXPLANATION OF PLATE 704.

Fig. 1.—Base and tip of flowering stem. Fig. 2.—Involucral bracts ×3. Fig. 3.—A floret ×3. Fig. 4.—An achene ×3.

PAGE 53

For *T. virginica* read *T. virginiana*.

PAGE 67

For *Trixia* read *Trixis*.

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AND

POPULAR DESCRIPTIONS

OF

PLANTS

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The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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M.E. Eaton

ANTHERICUM CHANDLERI

(Plate 697)

ANTHERICUM CHANDLERI

Lila de los llanos

Native of southern Texas and Mexico

Family LILIACEAE — LILY Family

Anthericum Chandleri **Greenman and Thompson, Ann. Mo. Bot. Gard. 1: 405. 1914.**

The genus *Anthericum* is the most cosmopolitan of the Liliaceae, for although the individual species are not wide-ranging they are spread over a greater territory than are those of any other genus in the family. The great majority, about eighty in number, are scattered over Africa, a few are in Europe and Asia, and the remainder, about twenty-five in number, are American. Nearly all of the species have grass-like leaves and small white, cream or yellow flowers, and few of them are showy enough to have attained horticultural recognition. They must be ranked among the many plants which form much of the earth's vegetation in a quiet way with nothing spectacular about them to attract attention, and are of interest chiefly to the botanist, who must consider all plants of equal importance in the eyes of Nature.

The American species of *Anthericum* are mostly similar to the one here illustrated, differing in various technical ways such as hairiness, width of leaves, flower color, and shape of capsule.

Our present subject was described from a specimen collected near Rio Hondo, Cameron County, Texas, by Harley P. Chandler, in honor of whom it was named. Its range is from southern Texas far down into Mexico. It grows in fertile black soil along with scattered growth of mesquite and in open clearings. The chief associates are grasses and other herbaceous plants which spring into rapid growth when rains come, but are dormant during long dry spells. It is called "*Lila de los llanos*" by the Mexicans, who sometimes use the roots as a poultice for old sores.

Anthericum Chandleri is an herbaceous glabrous perennial arising from a cluster of fleshy-thickened roots. The leaves are grasslike, up to three-quarters of an inch broad and twenty-four to thirty inches long. The inflorescence arises from the leaf-crown. It is up to thirty inches tall, the branches few and wide-spreading. The slender-pedicelled flowers are borne in fascicles from the axils of scarious, ovate-acuminate bracts. The perianth is orange-yellow, about an inch across; its lobes strongly reflexed, the outer ones much

narrower than the inner. The six stamens are one-half inch long, orange-yellow, the filaments scaly-muricate. The stigma is capitate, the style moderately stout, orange-yellow. The ovary is stout-cylindral, six-lobed. The fruit is an oblong-cylindrical capsule a a half-inch long, six-lobed, loculicidally dehiscent, the seeds black and irregularly angled.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Upper portion of a leaf. Fig. 2.—A portion of the inflorescence scape showing bracts. Fig. 3.—An inflorescence. Fig. 4.—An outer and an inner perianth part. Figs. 5–6.—Two stamens ×3. Fig. 7.—The gynoecium ×3. Fig. 8.—A mature capsule. Fig. 9.—A dehisced capsule and a seed.

PLATE 698

ADDISONIA

RENEALMIA VENTRICOSA

(Plate 698)

RENEALMIA VENTRICOSA

Native of Cuba

Family ZINGIBERACEAE — GINGER Family

Renealmia ventricosa Griseb., Cat. Pl. Cubens. 256. 1866.

For more than forty years the plant which our present subject represents has been grown in the New York Botanical Garden conservatories under the name of *Alpinia vittata.* About eight or ten years ago the plants flowered and have now been identified as *Renealmia ventricosa,* not heretofore known to be in cultivation. For nearly a hundred years there have been grown in conservatories plants called *A. vittata,* which name seems to have been applied to any variegated foliage plant of this type of growth. It is, therefore, not to be expected that all plants bearing this name will prove to be *Renealmia ventricosa,* some may be species of *Alpinia* or other related genera. The original source of the plant here illustrated is not known, but it is known to be native in eastern Cuba, so we must assume that to be the source.

As is the case with related genera such as *Hedychium* and *Alpinia,* these plants are easily grown under warm, moist greenhouse conditions. *Renealmia,* of course, with its inconspicuous flowers, may be classed only as a foliage plant, whereas the other two mentioned have showy flowers which add to their decorative value.

Renealmia ventricosa is a glabrous perennial herb, its stems arising from a thick rootstock. The stems are leafy, up to five or six feet tall, the leaves short-petioled, their blades six to ten inches long and one to two and a half inches broad with acute tips. The inflorescence is half-nodding, borne at the top of the leafy stems. The inflorescence bracts are pale whitish green with half-transparent margins. The white flowers are solitary or paired in the axils of the bracts. The calyx is tubular, about one-half inch long, white, three-lobed at the top. The corolla is about an inch long, white, with three oblong lobes; the labellum nearly entire, the single anther white, its connective unappendaged. The fruit is globular and glabrous, about one-half inch in diameter.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—The tip of a leafy stem. Fig. 2.—An inflorescence. Fig. 3.—A flower laid open.

TRADESCANTIA MICRANTHA

(Plate 699)

TRADESCANTIA MICRANTHA

Native of southern Texas and adjacent Mexico

Family COMMELINACEAE — DAYFLOWER Family

Tradescantia micrantha **Torr., Bot. Mex. Bound. 224. 1859.**

We are so accustomed to think of *Tradescantia* in terms of the hardy *T. virginica* and related forms, or of the common leafy *T. fluminensis*, the wandering-jew, that this rather rare and little-known species appears somewhat surprising. Its long-wandering stems and small leaves are rather unattractive, but the bright flowers, borne over a period of several months make it a suitable subject to grow along with a more leafy plant.

Tradescantia micrantha belongs among the lost and found botanical species, for it was for many years known only from a single specimen. First discovered near the mouth of the Rio Grande in 1854, by A. Schott, one of the collectors of the Mexican Boundary Survey, the one specimen then collected was all that was known of the plant until its rediscovery near Corpus Christi, Texas, in 1894 by A. A. Heller. Since then a few more stations have been located in southern Texas and the adjacent part of Mexico. Mr. Heller's specimens remained in a bundle of porous papers for nearly five months after their collection, but they then came into the hands of Dr. J. N. Rose of the U. S. Department of Agriculture, who seeing that some branches were still alive, planted them, and in a short time they multiplied into some 400 plants which were distributed to several botanical gardens. The plant has now disappeared from cultivation except in the region where it is native. It is, however, an easily grown subject, but has little horticultural value except as a carpet-plant under dry conditions. Our present plate was made from plants sent in by Robert Runyon of Brownsville, Texas.

Tradescantia micrantha is a perennial, creeping herb. The stems are soft and fleshy, much-branched, the internodes longer than the leaves and slightly inflated. The leaves are ovate-lanceolate, one-half to one inch long, soft and juicy as are the stems. The flowers are borne in terminal clusters subtended by two leaf-like spathes. The sepals are one-fourth inch long, lanceolate, concave, pale green with purple-red tips and a few sparse hairs on the dorsal side and at the apex. The petals are rhombic-ovate, bright rose-purple, about three-eighths inch long. The stamens have rose-purple filaments with long, beaded hairs, the anther-cells separated

by a broad connective. The style is slender and white, the ovary orbicular. The fruit has not been recorded.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Portion of a flowering plant. Fig. 2.—A calyx × 3. Fig. 3.—A petal × 2. Fig. 4.—A stamen × 3. Fig. 5.—The gynoecium × 3.

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M E Eaton

COMMELINANTIA ANOMALA

(Plate 700)

COMMELINANTIA ANOMALA

Native of Texas

Family COMMELINACEAE — DAYFLOWER Family

Tradescantia anomala **Torr., Bot. Mex. Bound. 225. 1859.**
Tinantia anomala **C. B. Clarke, DC. Monog. Phan. 3 : 287. 1881.**
Commelinantia anomala **Tharp, Bull. Torr. Club 49 : 273. 1922.**

When our present subject was described by Dr. John Torrey in 1859, his use of the specific name *anomala* indicated some doubt as to the proper placement of the plant. He wrote of it as intermediate between *Commelina* and *Tradescantia,* and such it appears to be upon superficial examination. The flower is like *Commelina* but the filaments are bearded as are those of *Tradescantia* although in a different way. The seeds are like neither. In fact, the *Commelina*-like flowers, the four kinds of stamens, the peculiar seed-structure and the manner of branching wherein the branches break through the leaf-sheaths at the nodes, are so distinct in the aggregate that one is astonished that it was not until 1922 that a new genus was erected to contain this interesting plant. Of course it must be remembered, that throughout the Commelinaceae the flowers are so evanescent and impossible of preservation that their true structure is very difficult to discover from dried material. This fact has caused endless confusion in the placement of species within the genera of the family, and it is to be hoped that some day a revision of the entire family may be made based upon living material, as it is only by that method that satisfactory structural descriptions can be made.

Our plant grows on moist, wooded slopes and stream-bottoms in the Edwards Plateau region of west central Texas.

Commelinantia anomala is an annual, tender herb with several clustered stems varying in height from eight inches to two feet. The branches, which become more numerous as the season advances, arise from the leaf-axils and break through the close-fitting leaf-sheaths, sometimes more than one arising from a node. The basal leaves are narrowly spatulate, eight to twelve inches long, the petiolar portion long ciliate, the blade with a few scattered long hairs. The stem leaves vary from two to ten inches long, the lower ones the longer, the upper becoming gradually shorter. The leaf-blades are lanceolate, acute or acuminate, the lower ones short-petioled, the upper becoming somewhat cordate-clasping at the base. The inflorescence is terminal on the stems and branches, subtended by a spathe similar to the upper stem leaves, but erect, broader and shorter and with no sheath. The flowers are borne three to sixteen in a scorpioid raceme,

each in the axil of a small, persistent bract. The three sepals are three-eighths to one-half inch long, blunt and slightly hooded at the tip, dorsally keeled, glandular-ciliate towards the tip in bud, the cilia deciduous. The corolla consists of two almost rhombic, sky-blue petals about three-quarters of an inch long, and an inconspicuous, whitish, ovate petal about an eighth of an inch long. The stamens have four kinds of filaments: the posterior one densely bearded at the base and in the lower two-thirds of the inner face with lavender-purple hairs; the two postero-lateral ones densely bearded above the middle with short lavender-purple, yellow-tipped hairs; the two antero-lateral ones bearded below the middle on the posterior margin with a tuft of short lavender hairs; the anterior one totally glabrous. The anthers are of two kinds, those of the three anterior stamens oblong and larger than the orbicular anthers of the three posterior stamens.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Base of stem. Fig. 2.—Leafy stem. Fig. 3.—Top of a flowering stem. Fig. 4.—Flower with the two large petals removed, showing the different types of stamens, the small petal, calyx and gynoecium ×2. Fig. 5.—The capsule ×2.

TRIXIS RADIALIS

(Plate 701)

TRIXIS RADIALIS

Native of tropical America

Family CARDUACEAE — THISTLE Family

Perdicium radiale, L., Sp. Pl. ed. 2, 1248. 1763.
Trixis radiale Lag., Amen. Nat. 1 : 36. in abs. 1811. Comb. implied only.
Trixis radialis Kuntze, Rev. Gen. 370. 1891.

Tropical American Composites are not often grown in cultivation except for some of our common flower garden annuals. The shrubby and climbing kinds are rarely seen outside of their native regions, although some of them are remarkably attractive in flower. As might be expected in a family of plants whose members are so similar in general flowering habit, only the outstandingly different ones are likely to become horticultural subjects. These statements are not intended to recommend our present subject for cultivation, for it is of hardly more than botanical interest. We do wish to say, however, that it represents an interesting tribe of the Composites, the Mutisiae, scarcely known in American horticulture except for the genus *Gerbera*. The species of *Mutisia*, however, would well be grown as cool greenhouse climbers, as they are attractive foliage plants and have beautiful, large, pink or red-rayed flower-heads.

The genus *Trixis* is primarily tropical, although two or three species reach the southwestern United States, our present one coming into southern Texas, but widespread in tropical America. Most of the species are shrubs or semi-climbers with yellow or orange flower-heads of varying sizes. In *T. radialis* the heads are borne in large sprays making a rather showy plant when in flower, although not an especially striking one.

Trixis radialis is a half-scrambling shrub with smooth brown bark and long, whiplike branches. The leaves are alternate, glabrous, oblong-elliptic, tapering at both ends, short-petioled, two to six inches long. The inflorescence is a cymiform panicle, the heads few at the ends of each of the panicle branches. The heads are a half inch long, subtended by an outer involucel of three to five bractlets. The involucre is cylindrical, the bracts linear, connate. The florets are all alike, bilabiate, bright orange-yellow, about one inch long. The pappus bristles are one-half inch long, the fruit a hairy achene about one-half inch long.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Tip of a flowering branch. Fig. 2.—A floret ×2.

VERBENA MARITIMA

(Plate 702)

VERBENA MARITIMA

Beach Vervain

Native of Florida

Family VERBENACEAE — VERVAIN Family

Verbena maritima Small, Bull. N. Y. Bot. Gard. 3 : 436. 1905.
Glandularia maritima Small, Man. Southeast. Fl. 1138 & 1508. 1933.

The large and important Vervain Family, with about eighty genera and three thousand species and varieties, is widespread in distribution. Very few land areas of the earth are without some of its representatives. Best known to the layman is the genus *Verbena*, founded by Linnaeus in the first edition of his Systema Naturae in 1737, but with a pre-Linnean history that goes back to the classical days of the ancient Greeks and Romans. In this historic genus over four hundred and fifty binomials have been published by botanical workers through the years, but a great many of the plants thus referred to do not belong in the true genus *Verbena* as now recognized. True verbenas are most abundant in the central and south-central portions of the United States, in Mexico, and in southern Brazil, Paraguay, Uruguay, Argentina, and Chile where over two hundred and five species and varieties are concentrated. In the Old World (Europe, Asia, Africa, and Australia) there are only about five native species and varieties and eight or nine additional ones introduced from America as weeds.

Because of the showy flowers of so many of its species, the genus *Verbena* (especially the section *Glandularia*, which is perhaps worthy of generic rank) has long been an important horticultural subject.

In the wild flora of Florida the genus *Verbena* is represented by fifteen species and varieties. Of these, eight are introduced and seven are native species. The one here pictured and *V. tampensis* are endemic to Florida.

The beach vervain is found in the coastal counties of the state from Monroe County north to Flagler County, and on the west coast to Lee County. Typically it inhabits sandy ridges bordering the ocean, sand-dunes, and even the beaches themselves, but occurs also in dune hammocks, low pinelands, flatwoods, and kitchen-middens. The species is apparently closely related to the widespread and extremely polymorphic *V. canadensis* of inland portions of the United States, which occurs in the more northern counties of Florida. The ranges of the two species overlap in Brevard, Flagler and Volusia counties, where intermediate specimens have been found.

It was apparently first collected and recognized as distinct by A. H. Curtiss, who gathered it on "sand ridges bordering the ocean [near Cape Canaveral], E. Florida, July [1879]" and distributed

it under the name *Verbena Aubletia* var. *maritima*. This name he published on the printed labels of his first distribution of North American plants (no. 1963) and in the advertising leaflet concerning it, but failed ever to validate it by a formal description.

A tea is made from the flowers and drunk hot by the Seminole Indians as an antidote for the bite of the venomous water-moccasin.

Because of its showy inflorescences and long blooming season, it seems probable that the species here depicted would prove itself a valuable horticultural subject, especially in seaside gardens in subtropical and tropical regions and along the coasts of Florida and our other Gulf States and southern California.

The beach vervain has numerous, slender, creeping or trailing stems and branches, which are smooth or sparingly pubescent, growing from perennial fibrous roots. The leaves are numerous, thick-textured, arranged in opposite pairs. The petioles vary from one to nine-sixteenths of an inch in length and are smooth or sparingly pubescent. The leaf-blades are bright-green, cuneate to orbicular-ovate or obovate, usually three-eighths to one and a quarter inches long and one-quarter to one inch wide, tapering regularly in cuneate fashion from the widest part to the margined petiole, incised-dentate or somewhat lobed, broadly obtuse or acute at the apex, smooth or sparsely pubescent on both surfaces. The inflorescence is a terminal spike, pedunculate, subcapitate during anthesis, becoming elongated to as much as two and three-quarters inches in fruit, densely many-flowered. The flowers are showy and bloom practically throughout the year. Each flower or fruit is subtended by a persistent, lanceolate, green bractlet about half as long as the calyx. The calyx is slender, tubular, three-eighths to one-half inch long, about one-sixteenth inch in diameter, appressed-pubescent (the hairs often glandular), conspicuously five-ribbed, its rim five-toothed with short, slender, subulate, unequal teeth, two of which are about one-sixteenth inch long, the other three about half that length. The corollas are salverform, varying from rose-purple to lilac-purple. The corolla tube is narrowly cylindric, one and a half to three times the length of the calyx, finely or densely pubescent on the outside; the limb deeply five-parted, widely spreading, three- to five-eighths inch in diameter; the lobes obovate and deeply notched at the apex. The four stamens are inserted in pairs at two levels near the mouth of the corolla-tube and entirely included by the tube. The filaments are slender and extremely short. The anthers are small, oblong, with or without glands. The single compound pistil has a slender, smooth style five-eighths to three-quarters inch long, shortly two-lobed at the apex, the posterior lobe smooth and non-stigmatiferous, the anterior lobe broader, papillose, and stigmatic. The ovary is four-sulcate and four-celled. The fruit is enclosed by the mature unchanged calyx and when ripe separates into four dark brown, one-seeded, subcylindric, crustaceous nutlets (cocci), which are about five thirty-seconds of an inch long, scrobiculate, with a broadened base, the commissural surface narrow and muricately roughened.

HAROLD N. MOLDENKE.

EXPLANATION OF PLATE. Fig. 1.—Tip of a flowering branch. Fig. 2.—Corolla laid open showing stamens ×1½. Fig. 3.—A mature calyx and subtending bractlet ×3. Fig. 4.—A seed ×3.

2

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M E. Eaton

TALINUM MENGESII

(Plate 703)

TALINUM MENGESII

Native of southeastern United States

Family PORTULACACEAE — PORTULACA Family

Talinum Mengesii W. Wolff, Am. Midl. Nat. **6**: 153. 1920.

In all the years that botanical exploration continued in the upland sections of the southeastern U. S., it was always accepted that there was but one species of *Talinum* in that region. It remained for Brother Wolff, of St. Bernard College in Cullman, Alabama, to prove in 1920 that there was a second species within the bounds of that area, and since then, in 1939, he proved the presence of even a third species.

These eastern highland Talinums are peculiar in their choice of habitat. Not content as are most plants with good soil, they must grow among loose rock or in shallow depressions on rock slopes where little or no soil can accumulate, or with their roots buried among the decaying stems of the mosses and Selaginellas which make large patches on the rock slopes and cliffs. In such seemingly impossible habitats these plants thrive in company with the rock sandwort, *Arenaria glabra*, which requires similar conditions. Both, however, require strong sunlight, dying out rapidly if any other plants become established close enough to produce more than very light shade.

Our present subject is the second of these Talinums to be discovered, and where the better known *T. teretifolium* is confined to crystalline rocks, *T. Mengesii* is seemingly confined to sandstone, and not only that, but to a particular geological formation. The plant is known only from about a dozen stations in Alabama, Tennessee and Georgia.

The species of this group of *Talinum* are rock plants in the strictest sense, and are quite attractive rock-garden subjects where they are hardy. They must, however, not be planted in good soil or they will be short-lived, but in the poorest of gravel scrapings with no more than one-half inch of a mixture of gravelly soil and decaying vegetative matter. In no sense of the word are they rock-pocket or crevice plants.

Talinum Mengesii is a perennial, succulent, glabrous herb, its stems arising from a fleshy branching caudex. The stems are about six inches tall, few-branched, with scattered linear-terete leaves one to two inches long. The inflorescence is borne from the forks of the

stem, on peduncles five or six inches long, cymosely branched, each branch subtended by a small bract. The flowers are three-quarters of an inch to an inch across, opening for about six hours on a single afternoon. The two sepals are concave, three-sixteenths of an inch long. The stamens are forty to one hundred in number, but most often fifty to eighty. The stigma is subcapitate, the style clavate, the ovary orbicular. The fruit is a three-valved globose capsule with numerous black seeds.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Roots and rootstock. Fig. 2.—Tip of a flowering branch. Fig. 3.—Calyx and gynoecium ×3. Fig. 4.—A petal ×2. Fig. 5.—Stamens, front and side view ×3. Fig. 6.—A late season flower.

GRINDELIA OOLEPIS

(Plate 704)

GRINDELIA OÖLEPIS

Native of southern Texas

Family CARDUACEAE — THISTLE Family

Grindelia oölepis Blake, Proc. Biol. Soc. Wash. 41 : 139. 1928.

Among the composites are many genera the species of which are so readily adapted to survival under adverse conditions that they have come to be classed as weeds. Such a one is the genus *Grindelia,* some of whose species are considered pests by the western farmers whose lands they invade. These species are especially able to grow in soils which have a high alkaline content, such as seashore and desert soils or those which after the spring rains become hard-baked and dry. They seed freely and are rapid colonizers, but only within limited areas, as the seed, having no pappus to act as a sail, cannot travel any distance.

As is to be expected in any genus of this type, there are some non-weedy species, and some even rare endemics. Our present subject is one of these latter, being known only from the Rio Grande delta in Texas, where it grows in slightly moist, black, sticky soil known locally as "gumbo." It was discovered by Robert Runyon of Brownsville, Texas, in 1923. Within its genus, this is one of the most distinct species, standing clearly apart in its lack of viscidity, narrow leaves, solitary discoid heads and broad, flat-based, involucral bracts. Most of the species of this genus are very viscid, giving off a balsamic odor when rubbed, and have taper-pointed involucral bracts.

Grindelia is botanically an interesting genus, usually considered as related to the asters, goldenrods and rabbit-brushes; showing, however, such strong affinities in its involucral and achene structure to the sunflower tribe as to indicate a relationship there also.

The genus was named in honor of David Hieronymus Grindel, Professor of Botany at Riga, Latvia, in the latter part of the eighteenth and early nineteenth cenutry.

Grindelia oölepis is a perennial herb with unbranched stems arising from a wiry creeping rootstock. The leaves are 1–3 inches long, and vary from spatulate to linear and are entire to five- or seven-toothed, the lower cauline ones close together, the internodes becoming longer towards the upper stem. The heads are solitary at the ends of long leafy stems. The involucre is about one-half inch across, the bracts somewhat squarrose (in living material), the outer-

most ones lance-ovate, the intermediate ones ovate-lanceolate to ovate, the innermost ones ovate to oblong. The head of florets is three-fourths inch across, bright lemon yellow. The individual florets have a cylindrical tube, a narrow funnelform throat and ovate lobes. The pappus consists of two slender, caducous awns. The achene is roughly three- or four-angled with hardened ribs and roughened faces.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. **Fig. 1.**—The base of a flowering stem. **Fig. 2.**—Tip of the same stem with a flower-head. **Figs. 3–6.**—Involucral bracts × 3. **Fig. 7.**—A floret × 3. **Fig. 8.**—An achene × 3.

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